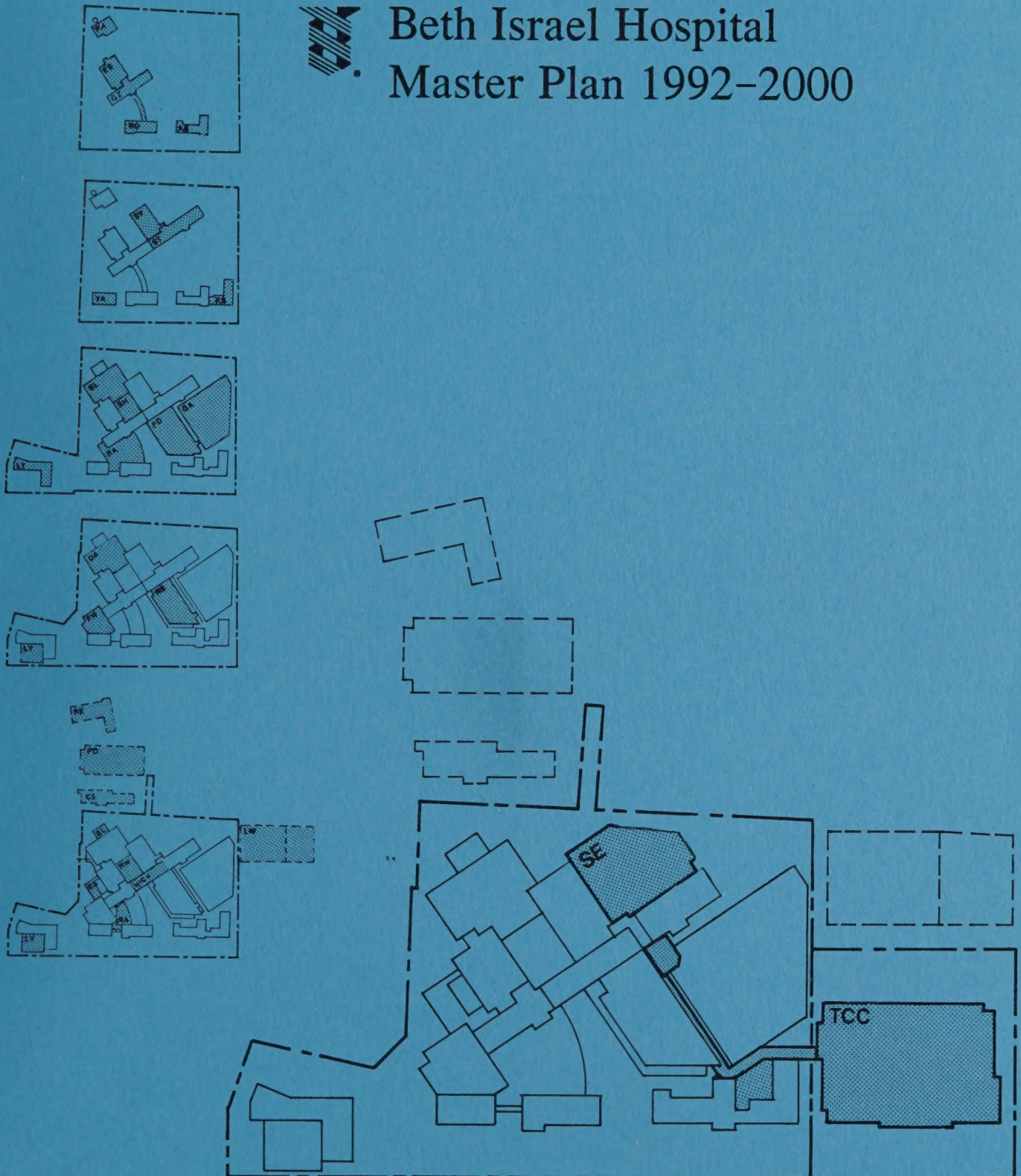


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September, 1992



# Beth Israel Hospital Master Plan 1992-2000



Beth Israel Hospital  
Master Plan 1992-2000

prepared by

Catherine Donaher & Associates

and

Rothman Rothman Heineman Architects Inc

September, 1992





**Beth Israel Hospital**  
Master Plan 1992-2000  
September, 1992

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Aerial View BIH Main Campus/MCA Site



Table of Contents

|                     |                                                             |           |
|---------------------|-------------------------------------------------------------|-----------|
|                     | <b>Introduction .....</b>                                   | <b>i</b>  |
| <b>Chapter I.</b>   | <b>Mission Statement .....</b>                              | <b>1</b>  |
| <b>Chapter II.</b>  | <b>Growth and Change 1985-1991.....</b>                     | <b>8</b>  |
|                     | Existing Conditions.....                                    | 8         |
|                     | Historical Development Patterns.....                        | 13        |
|                     | Patient Care .....                                          | 16        |
|                     | Research.....                                               | 19        |
|                     | Education.....                                              | 23        |
|                     | Child Care.....                                             | 23        |
|                     | Patterns of Activity .....                                  | 23        |
|                     | Off-Campus Functions .....                                  | 25        |
|                     | Parking and Traffic.....                                    | 25        |
| <b>Chapter III.</b> | <b>Facility Needs 1992-2000 .....</b>                       | <b>29</b> |
|                     | Proposed Program/Use Needs .....                            | 29        |
|                     | Patient Care .....                                          | 29        |
|                     | Research.....                                               | 32        |
|                     | Education.....                                              | 32        |
|                     | Circulation .....                                           | 40        |
|                     | Parking.....                                                | 48        |
| <b>Chapter IV.</b>  | <b>Analysis of Projects: Impacts &amp; Mitigation .....</b> | <b>58</b> |
|                     | Traffic .....                                               | 58        |
|                     | Environmental Impacts.....                                  | 60        |
|                     | Construction Impacts and Mitigation.....                    | 63        |
|                     | Housing Analysis.....                                       | 64        |
|                     | Urban Design .....                                          | 64        |
|                     | Other LMA Projects.....                                     | 68        |
| <b>Chapter V.</b>   | <b>Community Benefits and Services.....</b>                 | <b>71</b> |
|                     | Employment .....                                            | 71        |
|                     | Job Training.....                                           | 71        |
|                     | Health Care .....                                           | 77        |
|                     | Child Care.....                                             | 77        |
|                     | Education.....                                              | 77        |
|                     | Housing Linkage .....                                       | 78        |
|                     | Community Trust Fund.....                                   | 78        |
|                     | Traffic/Transit Improvements.....                           | 78        |

**Acknowledgments**



**Figures**

|            |                                                       |       |
|------------|-------------------------------------------------------|-------|
| Figure 1.  | Facilities Location - 1992 .....                      | 9     |
| Figure 2.  | Facilities - On Campus and Adjacent.....              | 11    |
| Figure 3.  | Campus Space Use Profile - 1992 .....                 | 12    |
| Figure 4.  | Development Periods.....                              | 14,15 |
| Figure 5.  | General Campus Organization - 1992.....               | 24    |
| Figure 6.  | Parking Locations - 1992 .....                        | 27    |
| Figure 7.  | Proposed Projects 1992-2000 .....                     | 37    |
| Figure 8.  | Campus Space Use Profile - Future .....               | 38    |
| Figure 9.  | Campus Space Use - Alternative Development Scenario.. | 39    |
| Figure 10. | Pedestrian Routes to Hospital Entrances.....          | 41    |
| Figure 11. | Vehicular Circulation - 1992.....                     | 46    |
| Figure 12. | Potential Vehicular Circulation Options .....         | 47    |
| Figure 13. | On Campus Parking for Master Plan Projects.....       | 57    |
| Figure 14. | View of Beth Israel Campus from Brookline Avenue..... | 66    |
| Figure 15. | View of Beth Israel Campus from South.....            | 67    |



**Tables**

|           |                                                        |    |
|-----------|--------------------------------------------------------|----|
| Table 1.  | Beth Israel Properties - Owned and Leased.....         | 10 |
| Table 2.  | Patient Care Statistics .....                          | 17 |
| Table 3.  | Geographic Distribution of Beth Israel Admissions..... | 18 |
| Table 4.  | Entering Traffic Volumes.....                          | 44 |
| Table 5.  | Level of Service Analysis.....                         | 45 |
| Table 6.  | On-Site Parking Demand .....                           | 53 |
| Table 7.  | On-Site Parking Supply.....                            | 54 |
| Table 8.  | Clinical Center Garage Requirements.....               | 55 |
| Table 9.  | Off-Site Parking Supply/Demand.....                    | 56 |
| Table 10. | Projects Proposed by Other LMA Institutions.....       | 69 |



## **Introduction**

The Master Plan of Beth Israel Hospital has been prepared to project and describe a Master Plan program of anticipated Hospital space needs over the next ten years, and to identify the building scenarios through which those needs can be realized. The space needs include approximately 500,000 gross floor area for ambulatory care and related services, with public space and retail uses included; approximately 300,000 gfa of clinical and support space for inpatient care, about 200,000 sf for research use, and related parking space.

The ambulatory care facility is anticipated to be built at the site of the Massachusetts College of Art site and will be built in more than one phase. The specific accommodations for clinical, research and support space depend on how the Hospital is able to satisfy research needs. Research space may be entirely off-campus in space leased from other owners, may be provided for in new buildings on campus, or some combination of the two. For this reason we have identified an alternative scenario for the Southeast Building to accommodate the space program.

Beth Israel's plans will serve, first and foremost, the medical and educational purposes it was founded to provide, and for which it has gained an international reputation. The benefits which accrue to the City of Boston and to the Hospital's neighbors from these projects are not incidental, however.

The Beth Israel Hospital is a significant force in the local economy. Through its payroll and purchases, the Hospital contributes over \$260 million annually. The projects described in this plan will result in a large increase in employment at the Hospital, providing up to 900 permanent jobs, many of which are targeted to high school graduates, and for which City of Boston residents are actively recruited.

Research activities at the Hospital contribute to the improved health and well being of its patients and to the community at large. Beth Israel researchers have made important contributions in the treatment of Heart Disease, Alzheimer's Disease, Cancer treatment strategies, Dyslexia and Asthma, among many others.

Modern medicine has moved increasingly toward providing care in ambulatory settings. The Clinical Center at the MCA site will allow the Beth Israel to consolidate its ambulatory programs and clinics, and to further its medical education functions in that setting. Ambulatory care creates increased need for convenient and directly accessible parking facilities. The projects described herein are expected to be served by additional parking on the Beth Israel campus. Travel Demand Management and parking solutions are being developed which meet the needs of critical users, and which avoid imposing undesirable impacts on nearby residential neighbors.



## **CHAPTER I. MISSION STATEMENT**

The Beth Israel Hospital Association is a voluntary, non-profit, non-sectarian, short term, acute care hospital located in Boston.

Since its founding in 1916, the Hospital has emphasized personalized care of high technical quality. In the subsequent three-quarters of a century, Beth Israel has expanded its vision to include quality of nursing service, attention to patients' rights, and innovation in clinical care and in teaching, a strong biomedical research program, and sound organization and management in its areas of emphasis. Beth Israel Hospital was highlighted, in the recently published book, The Service Edge, as one of the three health care institutions out of 101 companies in the United States "that profit from excellence in customer service." It is a major teaching hospital of Harvard Medical School and conducts extensive medical research. The Hospital serves as both a community hospital and a referral hospital for patients who require complex tertiary care. With the exception of pediatrics beyond neonatology, the Hospital provides a full range of specialized services. Patients are accepted for all major categories and sub-specialties of adult medicine, surgery, gynecology, and obstetrics. Short-term psychiatric care is offered to patients who require hospitalization for diagnosis and development of plans for subsequent therapy.

The original mission statement of Beth Israel Hospital was formulated as follows, in the Hospital By-Laws:

"The object of this Corporation shall be to provide medical and hospital services for the sick and disabled of any race, creed, color or nationality, and to carry on such educational, philanthropic and scientific activities and functions as are a part of efficient, modern hospital service."

The most recent mission statement issued in November 1983 expands upon the original statement:

"The major mission of the Beth Israel Hospital is to deliver patient care of the highest quality, in both scientific and human terms. This mission is to be carried out within a framework of financially responsible management which is sensitive to the requirements both to deliver health care which is efficient and cost-effective and to be considerate of the overall health needs of the populations of concern to the Hospital.

Patient care at Beth Israel Hospital is to be provided in a context of clinical teaching, through the participation and teamwork of clinicians, teachers, research scientists and others who are also the sources of innovation and progress for future improvement in care capabilities. The strength of Beth Israel is partly attributable to its role as a major teaching hospital affiliated with Harvard Medical School; to maintain and strengthen that role, the Hospital will continue to exercise leadership through excellence in teaching and research activities as well as in its clinical services."



The three components of Beth Israel's mission as a health care provider -- patient care, research and teaching -- are inextricably tied together, and the intrinsic connection among them create a continuous feed back process for researchers/practitioners/educators within the Hospital community.

### **Patient Care**

The Hospital has a tradition of taking progressive stands on patient care. In 1972, the Hospital created and enacted the first formal "Patients Rights" program in the nation to protect patients from abridgement of their rights to courteous treatment, full information, and privacy. Open ward accommodations for non-paying patients were abolished in 1964, and all patients were involved in the teaching programs regardless of source of payment, to the benefit of the patient, student, and doctor. All differentiation in treatment due to economic status has long been erased at the Hospital. In 1974, prompt attention to patients non-medical concerns was facilitated by instituting an in-house hotline connected to the Hospital's administrative offices. In 1978, the Hospital took a leadership role in Boston by providing alternative birth centers in the teaching hospital setting.

In 1972, with the support of the Commonwealth Fund and the Robert Wood Johnson Foundation, Beth Israel Hospital reorganized its clinics into the Beth Israel Ambulatory Care Center ("BIAC") to increase personalized care, accessibility and continuity of treatment in response to the problems encountered by patients seeking ambulatory care in the clinics of a teaching hospital. BIAC helped to improve care by giving the personal needs and individuality of patients equal status with the professionals' clinical and academic interests. Subsequently, BIAC has been used nation-wide as a model in assisting other teaching hospitals to improve their ambulatory care. From inception of the program, the medical director of BIAC has headed a Harvard Medical School program to train generalist physicians. Since 1974, the Hospital has provided a 24-hour Rape Crisis Intervention Program, which offers guidance and support to rape victims and follow-up counselling sessions for the victims and their families. In 1974, the Hospital instituted the professional nursing practice model known as Primary Nursing. It is the only Boston hospital which uses this program in all units, and has become a widely recognized national and international model for nursing practice.

Joint clinical programs with other local hospitals provide patients with a broader scope of services than any one hospital could provide alone. The Hospital is an active participant in: the Interhospital Clinical Oncology Committee, a link among certain other Harvard Medical School teaching hospitals (Brigham and Women's Hospital, Children's Hospital, New England Deaconess Hospital, and the Dana-Farber Cancer Institute) for the care of cancer patients; the Joint Center for Radiation Therapy, a conjoined service with the Children's Hospital, New England Deaconess Hospital, and Brigham and Women's Hospital which coordinates the shared use of radiation therapy physicians, technical personnel, expensive equipment and facilities located in the various hospitals; the Joint Program for Neonatology, a combination of neonatal services at several area hospitals to create a New England-wide referral service for newborns, as well as a program in the training of



neonatologists. The Hospital maintains joint clinical programs in infectious disease, disorders of bleeding and clotting, and otolaryngology with Children's Hospital and in cardiac surgery with Massachusetts General Hospital. The Longwood Area Trauma Center is a program which coordinates the emergency services of Beth Israel Hospital, Brigham and Women's Hospital, and Children's Hospital to create one of the three accredited Trauma centers in the Greater Boston area. In late 1984, Beth Israel Hospital, Brigham and Women's Hospital, Children's Hospital, and New England Deaconess Hospital formed a consortium to operate a joint MRI scanning program sharing a single unit at Beth Israel.

The Hospital is a major tertiary care referral center for virtually all specialties, in particular: gastroenterological and endocrine surgery, high risk obstetrics, renal disease, behavioral neurology, the neurosurgery of epilepsy, cardiac surgery, cardiology, and the treatment of cancer.

### **Research**

Beth Israel Hospital has distinguished itself as a major national research institution. Now ranked as the eighth highest recipient of research funding among independent hospitals in the United States, the Hospital is an important contributor to the progress of medical care and technology. Currently, approximately 175 studies are underway in the departments of the Hospital. Among those studies are programs in Alzheimer's Disease, Aspects of Normal Aging, Immune Response Mechanisms, Tumor Growth, Infectious Diseases, Cardiology and Molecular Biology.

The Hospital has an active technology transfer office which coordinates the filing and receipt of patents, corporate royalty agreements and contracts supporting research. While such business arrangements are not particularly remunerative in general, their modest proceeds tend to support further biomedical research, and they reinforce the tie between research activity and economic development.

Since 1975, the Hospital has operated a ten-bed Clinical Research Center funded by the NIH. This unit permits patients hospitalized under specific research protocols to be studied in carefully controlled circumstances.

### **Education**

The Hospital is a major teaching facility of Harvard Medical School. Members of the medical staff of Beth Israel Hospital provide about 20% of the clinical instruction for Harvard Medical School students. The President of Beth Israel Hospital holds the academic rank of Professor of Medicine, and each of the chiefs of major services at Beth Israel holds tenured professorial rank at Harvard.



## **Beth Israel Hospital**

Master Plan 1992-2000

September, 1992

## **Mission Statement**

The Hospital operates eight accredited residency programs for 54 interns and 157 residents. The Hospital participates annually with other area teaching hospitals in providing 62 additional residency positions in the following clinical departments: Neurology, Orthopedic Surgery, Neuropathology, Plastic Surgery, Dermatology, and Therapeutic Radiology. These trainees move into practice in the Greater Boston Community or into teaching positions in academic medical centers throughout the nation. Other trainees return to their native lands abroad.

Harvard Medical Center Corporation, of which Beth Israel Hospital is a participating member along with other LMA institutions, acts in part to coordinate many of the administrative and clinical programs and the rotation of residents.

In cooperation with area colleges, the Hospital provides clinical training for other health professionals in nursing, respiratory therapy, physical therapy, laboratory technology, and social work. Beth Israel Hospital trains hospital administrators from university graduate programs such as those at Yale University, Harvard University School of Public Health, and the University of Michigan, and has a stream of observers as well from all over the globe.

Health care education is provided to the Hospital's patients and the public through a variety of media. It regularly publishes *Wellbeing*, a medical publication for the lay person. Health care programming on closed circuit television available free to all inpatients, , individual counseling, community lecture series on women's health, health care for the elderly, classes in prenatal education, stopping smoking, and a four-week program for sufferers of back pain are examples of other Hospital programs. The Hospital's video production studio enables staff to produce their own educational videotapes for use in these programs.

### **Community Service**

Beth Israel Hospital is well respected for its service to the City of Boston, and to the residents of its adjacent neighborhoods in Mission Hill, the Fenway, Roxbury and Brookline. The Hospital has a long record of providing benefits to the City and the neighborhoods both in the area of health care and service. Boston residents, over one-third of Beth Israel's inpatient admissions, benefit directly from the excellent medical care provided and indirectly from the research and teaching activities of the Hospital. Also, the Hospital encourages and supports the extensive community activities of its medical staff and other employees.



Consistent with its mission of delivering "health care that is efficient and cost-effective" and "considerate of the overall health needs of the populations of concern to the Hospital", Beth Israel provides service to neighborhood health centers within the City of Boston. These include:

o Dimock Community Health Center, Roxbury

Obstetrics: A certified midwife and a rotating resident from Beth Israel provide all prenatal care at the Center, with a senior Beth Israel physician providing backup coverage. The Beth Israel Obstetrical Faculty Practice Plan covers all deliveries. In FY 1990, 250 babies were delivered.

Medicine: The Medical Director of the Dimock Center has admitting privileges at Beth Israel and admits the majority of the Center's medical patients to Beth Israel, with referrals to the Hospital's specialty physicians and clinics.

o Fenway Community Health Center:

Up to three full-time internists have admitting privileges at Beth Israel and admit the majority of their medical patients to Beth Israel with specialty referrals to its clinics and physicians.

o Roxbury Comprehensive Community Health Center:

Obstetrics: The Center's two obstetricians have admitting privileges and faculty appointments in OB/GYN at Beth Israel. In FY 1990, 350 babies were delivered.

o East Boston Neighborhood Health Center:

Obstetrics: Two physicians with Beth Israel faculty appointments provide obstetrical care at the Center. In FY 1990, 420 babies were delivered.

Medicine: All Health Center-based physicians have admitting privileges at Beth Israel and admit the majority of their medical patients to Beth Israel.

Surgery: Full-time faculty surgeons rotate at the Health Center to cover their clinics and to admit all surgical patients to Beth Israel.

o South Cove Community Health Center:

The Center's one part-time obstetrician has a faculty appointment at Beth Israel. This physician and the Center's certified nurse midwife have admitting privileges at Beth Israel. In FY 1990, 250 babies were delivered.



Other examples of Beth Israel's community service activities include:

In response to Boston Mayor Flynn's concerns about inner city infant mortality, Beth Israel has stepped up its efforts for maternal, child and infant health in those areas by committing an additional \$500,000 annually to fund additional personnel and programs.

Beth Israel maintains an obstetrical affiliation with the Neil J. Houston House at Dimock Community Health Center. The Houston House is a residential program offering pregnant women in the criminal justice system an alternative to incarceration during pregnancy. Beth Israel provides pre-natal medical care, ambulatory OB services, and delivery at the Hospital.

Following cessation of State funding for its Sexually Transmitted Disease Clinic, Beth Israel undertook the obligation to continue this important public health activity on its own.

Beth Israel Women's Health Associates provides prenatal care to women in MCI Framingham and in the Chelsea Correctional Facility. Their babies are delivered at Beth Israel.

Beth Israel has been a contributor to the Mission Possible summer camp, aimed at promoting racial, ethnic and socio-economic harmony among children and teens who live on Mission Hill.

Beth Israel was the first medical/health institution in the Longwood Medical Area to join the Kenmore Association in an effort to support business efforts to improve the Kenmore Square Area.

Beth Israel is an active participant in the Fenway Beautification Program co-sponsored with the Boston Fenway Program.

Beth Israel's president serves actively on the Capital Campaign Committees of the Fenway Community Health Center and Dimock Community Health Center.

Beth Israel took a leadership role in the Longwood Medical Area Food Project to address issues of hunger in the area surrounding the Medical Area.

### **Economic Opportunity**

As a major employer and purchaser, Beth Israel Hospital is a large contributor to the local economy.

An important aspect of the Hospital's economic benefit to the City of Boston is providing opportunities for good jobs in the health field where growth and advancement are possible. Beth Israel Hospital has established employment goals for residents of the City of Boston and particularly, members of minority groups. The Hospital's record of accomplishment in this area is worthy of note.



## Beth Israel Hospital

Master Plan 1992-2000

September, 1992

## Mission Statement

The Hospital employs about 5,000 people. Of these, 41% are residents of the City of Boston. Over 10% of the Hospital's employees are residents of the neighboring residential areas of Mission Hill, Roxbury and the Fenway. City of Boston residents are represented in every job group, ranging from 20% of the Managerial/Supervisory staff to 90% of the Service staff.

The Hospital generates significant economic activity through the wages and salaries it pays and the goods and services it purchases. The Hospital's economic impact from payroll and purchases totals over \$300 million annually.



## **CHAPTER II. GROWTH AND CHANGE 1985-1991**

### **Existing Conditions**

Beth Israel Hospital, located at 330 Brookline Avenue between the Fenway and Longwood Avenue, owns 8.94 acres at the north end of the Longwood Medical Area (LMA). All abutting properties are owned by other institutions except that Beth Israel received provisional designation in November, 1990 as the developer of the Massachusetts College of Art/Longwood property. The property is bordered at the north and east by Emmanuel College, at the east by the Judge Baker Guidance Center, at the south by the Longwood North parking garage and, beyond the MCA/Longwood site, by Longwood Avenue, and at the west by Brookline Avenue. (See Figures 1 and 2.)

With the certification of the recently completed Neo-Natal Intensive Care Unit, the Hospital will be licensed by the Massachusetts Department of Public Health to operate 524 beds. About 24,000 inpatients receive treatment each year; 6,000-6,500 babies are delivered annually; the 24-hour Berenson Emergency Unit has 40,000 visits annually; and an innovative general medical center for ambulatory care, BI Healthcare Associates, the walk-in unit, and various outpatient specialty units have more than 200,000 visits each year.

The Beth Israel Hospital property is occupied entirely by the Hospital's clinical, teaching and bio-medical research use, with parking as an accessory use. Hospital programs include inpatient and outpatient care, research and education. Existing buildings on site are occupied fully, and site coverage with buildings is almost complete. (See Figure 3.) Buildings on the hospital campus are listed in Table 1 with their height and size.



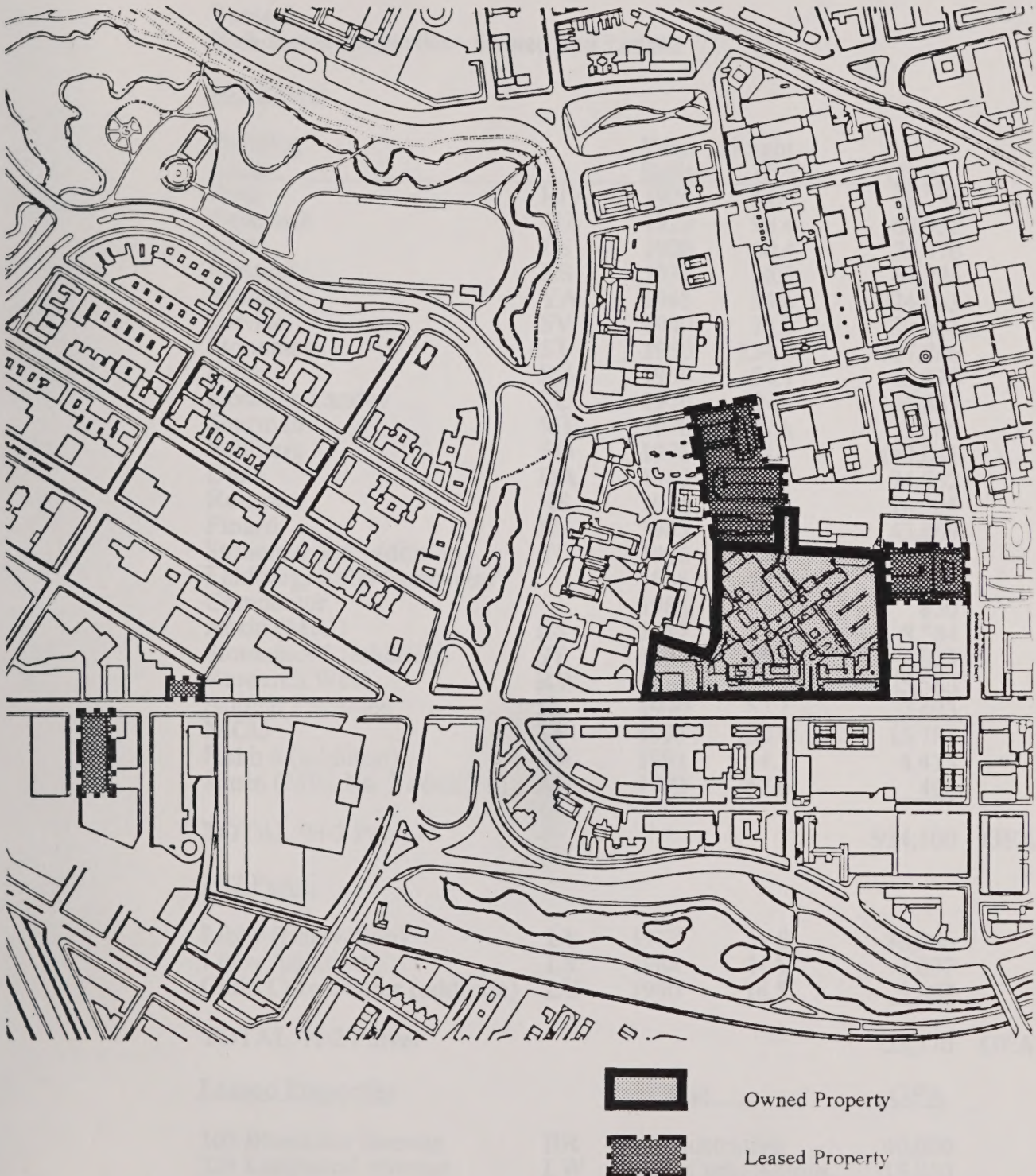


Figure 1. Facilities Location - 1992



**Beth Israel Hospital**

Master Plan 1992-2000

September, 1992

Growth and Change 1985-1991

Table 1

**Beth Israel Properties - Owned and Leased**H-3 Parcel

| Building Name              |    | Year Built | Height (ft.) | GFA         |
|----------------------------|----|------------|--------------|-------------|
| Rose                       | RO | 1928       | 54.6         | 29,758      |
| Gryzmish                   | GZ | 1929       | 98.4         | 82,952      |
| East                       | ES | 1930       | 60.4         | 26,470      |
| Kirstein                   | KS | 1931       | 46.3         | 64,226      |
| Yamins                     | YA | 1948       | 54.6         | 24,963      |
| Service                    | SV | 1949       | 78.0         | 39,661      |
| Stoneman                   | ST | 1950       | 124.0        | 107,206     |
| Rabb                       | RA | 1966       | 54.1         | 46,578      |
| Slosberg-Landay            | SL | 1970       | NA           | 66,883      |
| Sherman                    | SH | 1970       | NA           | 33,585      |
| Feldberg                   | FD | 1976       | NA           | 149,041     |
| Dana                       | DA | 1982       | 136.7        | 74,852      |
| Reisman                    | RS | 1984       | 166.4        | 78,225      |
| Finard                     | FN | 1985       | 67.5         | 43,869      |
| Stoneman 4-8 (addition)    | ST | 1986       | 124.0        | 5,430       |
| Feldberg/Rabb Connector    |    | 1986       | 13.7         | 1,393       |
| Compactor                  |    | 1986       | 15.5         | 850         |
| Ansin (MRI)                | ES | 1987       | 57.6         | 8,584       |
| Stoneman 1 (addition)      | ST | 1987       | 25.3         | 835         |
| Research West              | RW | 1989       | 136.7        | 25,560      |
| Animal Facilities          | SL | 1990       | 57.1         | 2,493       |
| NICU                       | ST | 1991       | 138.0        | 15,781      |
| Rabb 4 (addition)          | RA | 1991       | 54.1         | 4,415       |
| Ansin (MRI No. 2 addition) | AN | 1992       | 57.6         | 490         |
| TOTAL/H-3 Parcel           |    |            |              | 934,100 GFA |

H-2 Parcel

|                              |    |      |      |            |
|------------------------------|----|------|------|------------|
| Libby (renovation)           | LY | 1977 | 31.8 | 38,266     |
| Libby Addition               | LY | 1984 | NA   | 7,097      |
| Child Care Center (addition) | LY | 1990 | 16.5 | 5,807      |
| TOTAL/H-2 Parcel             |    |      |      | 51,170 GFA |

Leased Properties

|                      |    | Use               | GFA    |
|----------------------|----|-------------------|--------|
| 109 Brookline Avenue | BR | Administrative    | 40,000 |
| 333 Longwood Avenue  | LW | Amb. Care, Admin. | 15,840 |
| Research East        | RE | Research          | 45,727 |
| Campus Shop          | CS | Administrative    | 7,700  |
| 132 Brookline Avenue | BR | Administrative    | 8,654  |

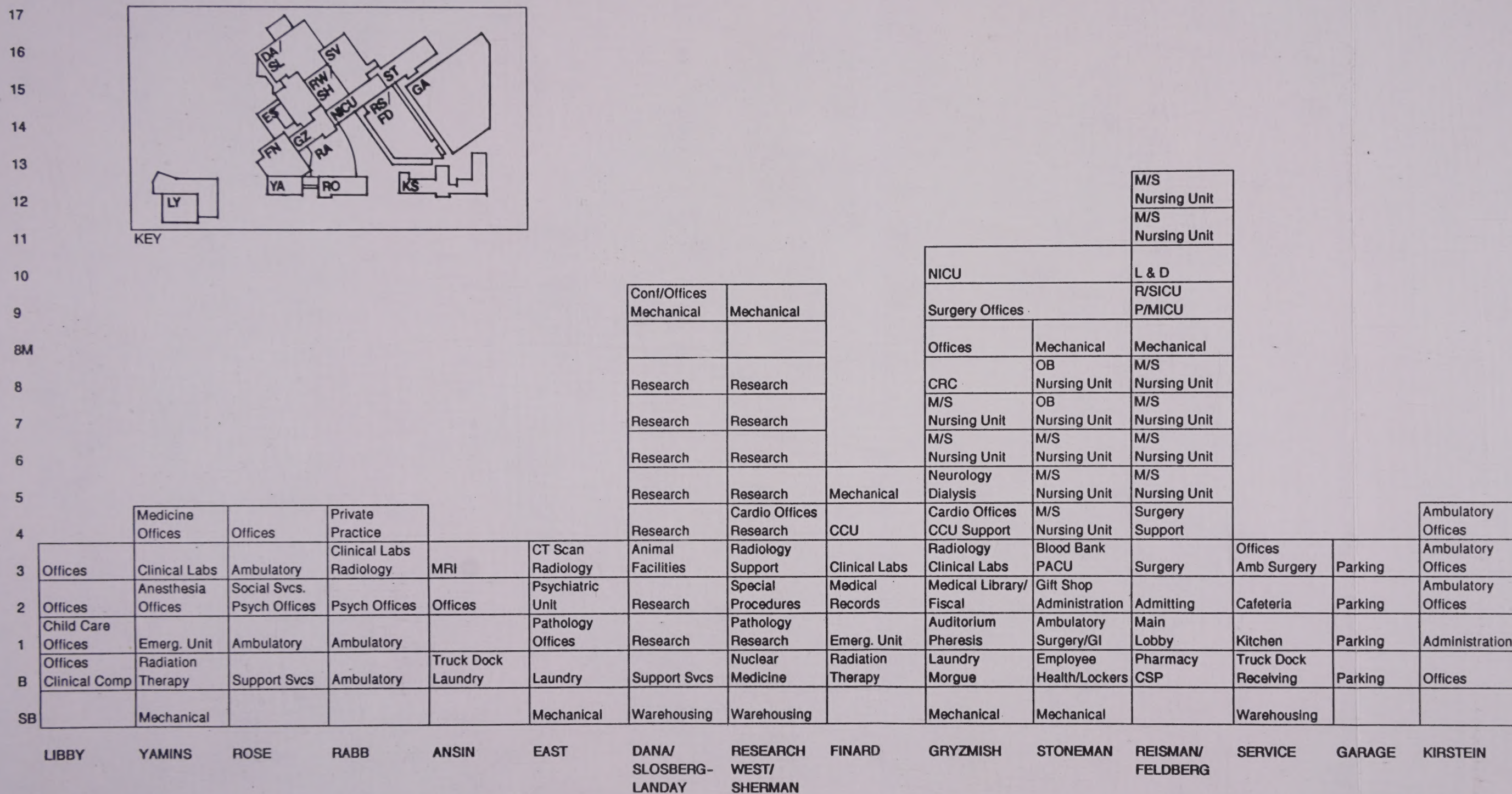
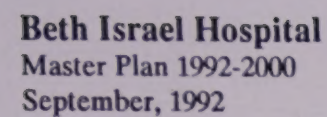
**Table 1. Beth Israel Properties - Owned and Leased**





Figure 2. Facilities - On Campus and Adjacent







### **Historical Development Pattern**

Historical development at Beth Israel Hospital is characterized by five distinct periods of sustained new construction; the earlier periods are separated by intervals of several years without new construction.

Figure 4 summarizes the development periods as a chronological series of diagrammatic site plans indicating new additions in the five development periods:

1927-1932

1948-1958

1966-1977

1982-1985

1985-1991

Three of the five development periods occurred after enactment in 1965 of the Boston Zoning Code. As provided in the code, the gross floor area of buildings constructed before 1965 is excluded from computations that determine the number of required truck loading bays.

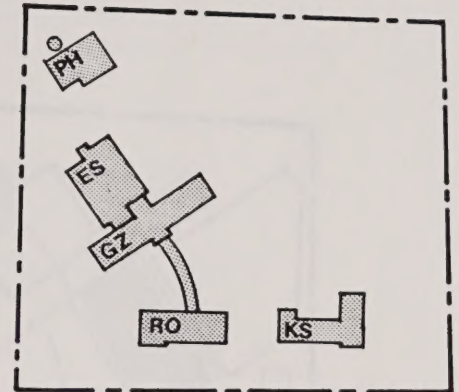




## Development Periods

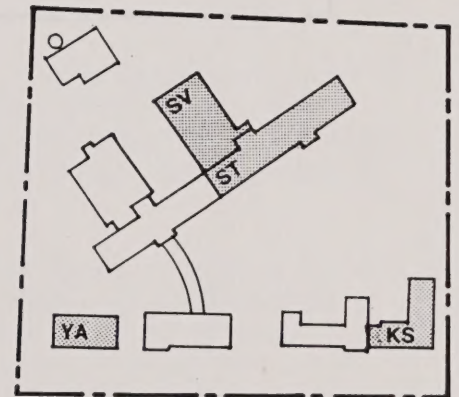
### Period 1927-1932

|                |    |      |
|----------------|----|------|
| Rose           | RO | 1928 |
| Gryzmish       | GZ | 1928 |
| Power House    | PH | 1928 |
| East           | ES | 1930 |
| Kirstein/North | KS | 1931 |



### Period 1948-1958

|                |    |      |
|----------------|----|------|
| Yamins         | YA | 1948 |
| Service        | SV | 1949 |
| Stoneman       | ST | 1950 |
| Kirstein/South | KS | 1950 |



### Period 1966-1977

|                    |    |      |
|--------------------|----|------|
| Rabb               | RA | 1966 |
| Slosberg-Landay    | SL | 1969 |
| Sherman            | SH | 1970 |
| Garage             | GA | 1973 |
| Libby (renovation) | LY | 1975 |
| Feldberg           | FD | 1976 |

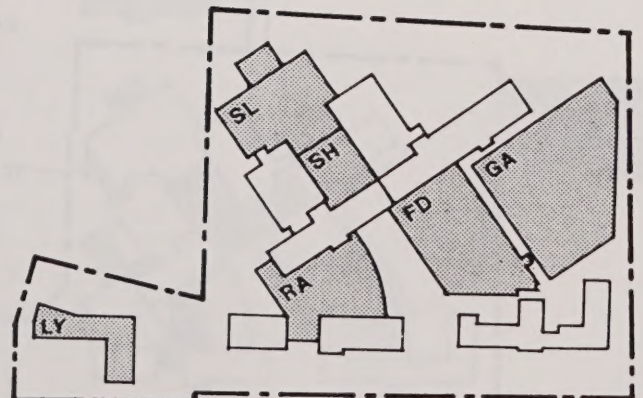


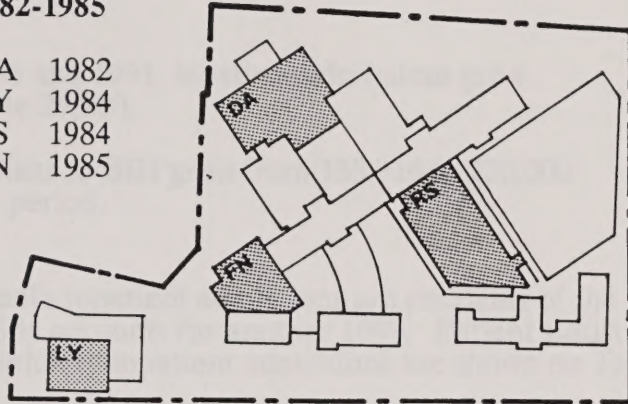
Figure 4. Development Periods





**Period 1982-1985**

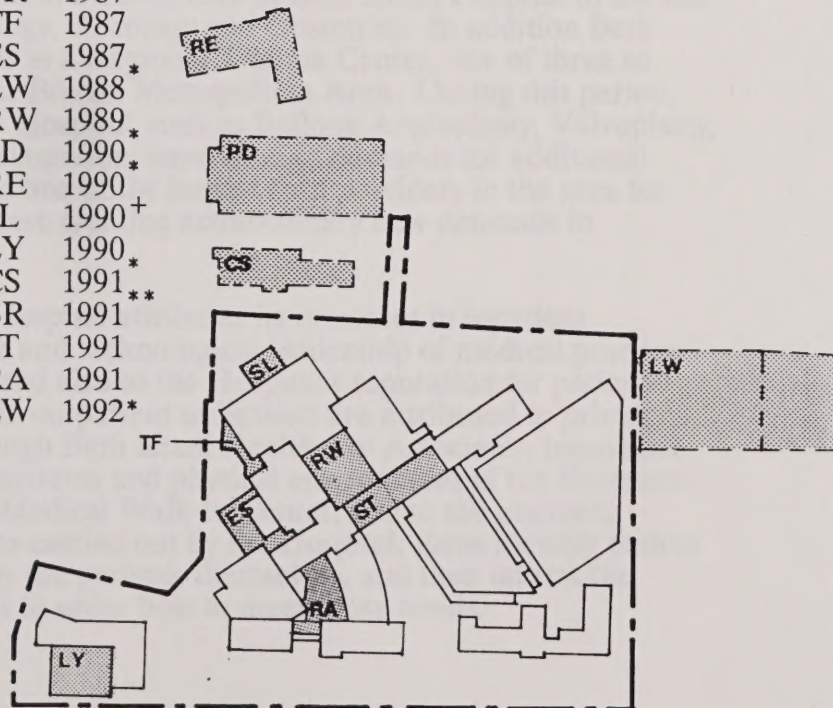
|                |         |
|----------------|---------|
| Dana           | DA 1982 |
| Libby Addition | LY 1984 |
| Reisman        | RS 1984 |
| Finard         | FN 1985 |



**Period 1985-1991**

|                     |           |
|---------------------|-----------|
| 109 Brookline       | BR 1987** |
| Trash Facility      | TF 1987   |
| Ansin (MRI)         | ES 1987*  |
| 333 Longwood        | LW 1988   |
| Research West       | RW 1989   |
| Parking Deck        | PD 1990*  |
| Research East       | RE 1990*  |
| Animal Facilities   | SL 1990+  |
| Child Care Addition | LY 1990*  |
| Campus Shop         | CS 1991*  |
| 132 Brookline       | BR 1991** |
| NICU                | ST 1991   |
| Rabb Addition       | RA 1991   |
| 333 Longwood        | LW 1992*  |

- \* leased
- \*\* leased (not shown)
- + Floor 3 Addition



**Figure 4. Development Periods**



## **Patient Care**

The decade of the eighties brought significant growth and change to both inpatient and outpatient facilities at the Hospital in response to increased volume of both inpatient and outpatient admissions.

- o Between 1985 and 1991, inpatient admissions grew from 20,074 to 23,200.
- o Outpatient visits to BIH grew from 138,316 to 220,000 in that same period.

Over one-third of Beth Israel's inpatient admissions are residents of the City of Boston. Nearby Brookline accounts for another 10%. Patient statistics and the geographic distribution of inpatient admissions are shown on Tables 2 and 3.

It is also worthy to note that over 7,500 patients come to Beth Israel for care from more distant parts of the state, the rest of the United States and overseas. While these patients come for the high quality health care provided at Beth Israel, their expenditures and those of their visitors also represent an important contribution to the local economy.

The largest areas of growth in medical care at Beth Israel Hospital in the last five years include Cardiology, Oncology and Obstetrics. In addition Beth Israel has been designated as a Regional Trauma Center, one of three so designated for the Greater Boston Metropolitan Area. During this period, specialized services at the Hospital, such as Balloon Angioplasty, Valvoplasty, and Bone Marrow Transplantation, have created demands for additional space. Also, Beth Israel is one of the largest care providers in the area for persons with AIDS, a disease creating extraordinary new demands in medicine.

The management of the Hospital attributes its increases in inpatient utilization to the scientific and technological leadership of medical practice available at the Hospital and also to the Hospital's reputation for patient-oriented care. Increases in outpatient utilization are attributed to primary health care available through Beth Israel Healthcare Associates, innovative specialty clinics, the care systems and physical environment of the Berenson Emergency Unit and the Medical Walk-In Center, and to the planned, effective marketing studies carried out by the Hospital; these identify patient care needs as perceived by the patients themselves, and then inform the Hospital's planning efforts in order best to meet those needs.



Table 2

**Patient Care Statistics**

| Year | Average<br>Available<br>Beds | Admissions | Patient<br>Days | Average<br>Length<br>of Stay | Occupancy<br>Percentage | Emergency<br>Visits | Clinic<br>Visits |
|------|------------------------------|------------|-----------------|------------------------------|-------------------------|---------------------|------------------|
| 1985 | 460                          | 20,074     | 143,287         | 7.1                          | 85                      | 34,850              | 138,316          |
| 1986 | 460                          | 20,701     | 146,898         | 7.1                          | 88                      | 35,735              | 145,378          |
| 1987 | 460                          | 21,619     | 146,968         | 6.8                          | 88                      | 35,925              | 154,399          |
| 1988 | 460                          | 22,023     | 152,730         | 6.9                          | 90                      | 38,551              | 153,329          |
| 1989 | 491                          | 23,418     | 159,840         | 6.7                          | 89                      | 39,583              | 165,329          |
| 1990 | 504                          | 23,382     | 152,422         | 6.5                          | 83                      | 37,270              | 165,352          |

Source: Hospital records



Table 3

**Geographic Distribution of Beth Israel Admissions  
FY 1989**

| <u>Primary Service Area</u>   | <u>Number of<br/>Admissions</u> | <u>Percent<br/>of Total</u> |
|-------------------------------|---------------------------------|-----------------------------|
| Boston                        | 7,881                           | 33.7                        |
| Brookline                     | 2,414                           | 10.3                        |
| Newton                        | 757                             | 3.2                         |
| Cambridge                     | 779                             | 3.3                         |
| Revere/Winthrop               | 775                             | 3.3                         |
| Chelsea                       | 407                             | 1.7                         |
| Somerville                    | 520                             | 2.2                         |
| Quincy                        | 302                             | 1.3                         |
| Arlington                     | 250                             | 1.1                         |
| Total Primary                 | 14,085                          | 60.1                        |
| <u>Secondary Service Area</u> |                                 |                             |
| Malden/Everett/Medford        | 938                             | 4.0                         |
| Belmont/Watertown/Waltham     | 419                             | 1.8                         |
| Dedham/Milton                 | 241                             | 1.0                         |
| Needham/Wellesley             | 223                             | 1.0                         |
| Total Secondary               | 1,821                           | 7.8                         |
| Total Primary & Secondary     | 15,906                          | 67.9                        |
| Other Massachusetts           | 6,142                           | 26.2                        |
| All Other                     | 1,370                           | 5.9                         |
| TOTAL HOSPITAL                | 23,418                          | 100.0                       |

Source: Hospital records.



With the completion of "The Project" in 1985, Beth Israel succeeded in offering modern attractive facilities to accommodate these increasing demands by providing additional beds for both acute and intensive care, an innovative labor/delivery/recovery suite, and an emergency unit. Some of these needs were generated by:

- inpatient oncology treatment and advances in the methods of care for oncology patients;
- outpatient care and benefits for patients with cancer;
- improvements in technology in the treatment of epilepsy, heart disease, diabetes and renal disease;
- increased demand for Beth Israel's obstetrical services;
- increased case mix intensity across all services as routine, uncomplicated cases diminished; and
- more patients admitted as emergency or urgent cases, rather than elective.

A new building (Ansin) for the Joint Center for Magnetic Resonance Imaging was completed to improve the Hospital's diagnostic capabilities, and improve patient waiting, stretcher holding, ultrasound and mammography facilities.

### **Research**

Throughout its history, Beth Israel Hospital has been prominent in its research discoveries, many of which have had widespread clinical application. Some examples are:

#### **o Heart Disease**

The first use of radioactive compounds to enable non-invasive study of cardiac performance.

Development of the cardiac pacemaker, and the defibrillator, which ushered in the era of electronic monitoring and control of cardiac function.

Development of a laser-angioplasty catheter which not only re-opens blocked coronary arteries but destroys the atherosclerotic plaque causing the obstruction.



o     Epilepsy

Development of a wearable, portable recorder for brain waves with a continuous "memory", so that an ambulatory patient having an epileptic seizure will have documented the electrical brainwave events immediately prior to the seizure, allowing for specific localization of the needed treatment.

Development of the balloon valvuloplasty technique in adults as a method of accomplishing needed treatment for aortic stenosis yet avoiding open heart surgery. This process makes treatment both simpler and less costly and also available to an additional number of patients who would not be able to withstand conventional surgery.

o     AIDS

Clinical testing of medications for AIDS -- Beth Israel's program of experimental treatment is the largest in the City.

o     Aging

Clinical studies on common problems of the elderly, such as incontinence and falls leading to broken hips, with the development of new strategies for both prevention and treatment.

o     Psoriasis

Phototherapy treatments bringing new relief for psoriasis.

o     Cancer Treatment

The Beth Israel Hospital Solid Tumor Autologous Marrow Program ("STAMP") is a treatment strategy which permits the use of high levels of anti-cancer agents in combination, at lower risk to the patient by temporary removal of bone marrow from the patient prior to treatment, after which the bone marrow is replaced.

o     Immune Response Mechanisms

A comprehensive program of research is being carried out on the components and intermediates of the immune response including work on the effects of Interleukin-I and Interleukin-II. Important new therapies are under development for certain malignancies, inflammatory diseases and, possibly AIDS.



o Dyslexia Research

This program investigates the biological foundation of language development with special emphasis on developmental dyslexia. Especially of interest is work relating brain function and structure to impairments of the immune system, a relationship first elucidated at Beth Israel Hospital.

o Orthopedics/Biomechanics Laboratory

A fully integrated laboratory combines the fields of medicine and engineering to investigate problems of bone breakage and healing, as well as prosthetic function, optimization, and biocompatibility.

o Tumor Growth Research

Investigations are being carried out on the mechanisms by which local environments support the rapid growth of tumors. This includes the identification of a vascular permeability factor which enhances blood supply to growing tumors.

o Asthma Research

This project investigates the mechanisms of asthma with a view of identifying and developing interventions to prevent or relieve asthmatic attacks. One area of research is the use of fish oils as a modifier to the inflammatory mediators which are responsible for the asthma response. Another new area is the testing of a blocker for leukotriene, an inflammatory response component which has only recently been implicated in asthma.

The research activities at Beth Israel Hospital have grown substantially in the past five years. In 1985, total research expenditures amounted to \$14,671,000. By 1990 that figure was \$24,471,000, representing a 70% increase in six years.

Over the past four years the Hospital has attracted more than \$3,500,000 in research funding and \$200,000 in royalties and license fees from corporations. Examples of Hospital-owned technologies currently under corporate agreements include the following:

- o Diagnosis of Cancer Using NMR: A Research Physician in the Radiology Department, has devised a method for screening blood samples for the presence of cancer. This screening test detects cancer by measuring the magnetic properties of molecules in blood plasma using NMR spectroscopy. Beth Israel Hospital has filed patent applications covering this technology. Further clinical testing is underway to document the accuracy of the test in order to obtain FDA approval.



- o Drug Delivery Systems: Two researchers in the Department of Medicine, have developed compounds and methods of delivering insulin intra-nasally for improved treatment of diabetes patients. The drug delivery technology appears broadly applicable for delivery of therapeutic hormones and other medications. Beth Israel Hospital has received a patent of this invention, and clinical trials are presently being conducted in order to obtain FDA approval.
- o Treatment of Cardiovascular Disease: New developments in laser balloon catheters will permit improved treatment of the buildup of deposits on arterial walls as an alternative to coronary bypass surgery. Beth Israel Hospital technologies have been shown to reduce the frequency of reclosure experienced with current angioplasty techniques and products. The Hospital has been issued patents covering these inventions and clinical trials are presently being conducted in order to obtain FDA approval.
- o Blood Clot Filter: A blood clot filter has been fabricated in Beth Israel labs from shape memory metal. This design permits the filter to be initially quite small in size for ease of insertion into the patients vein with the aid of a catheter. Upon warming in the body temperature, the filter expands within the vein to an umbrella shape, thereby catching any large clots. The Hospital has been issued a patent on this invention and the filter is presently being tested in clinical trials in order to obtain FDA approval.

The reasons for growth in research include the expansion of Beth Israel's capacity and emphasis on research as an essential adjunct to its teaching and care missions, as demonstrated by the creation of the Division of Molecular Medicine for study of genetics, immunology, hematology and other fields; new appointments in the Departments of Medicine, Surgery, and Neurology. The location of its clinical facilities in convenient proximity to its research laboratories to support the multiple roles of the Hospital's medical staff has been a related consideration, not necessarily inviolate but to be carried out always to the extent possible.



During the past five years the research space available for these Hospital based research activities has increased by 50%. New facilities for research and research support have been provided on-site with new infill construction and vertical expansion, and off-site at the adjacent former Science Building at Emmanuel College:

|                 |            |          |                                                          |
|-----------------|------------|----------|----------------------------------------------------------|
| Research West   | 25,560 gfa | On-site  | Molecular Medicine<br>Anesthesia, Cardiology,<br>Surgery |
| Research East   | 45,727 gfa | Off-site | Medicine, Pathology<br>Obstetrics                        |
| Animal Facility | 2,493 gfa  | On-site  | -                                                        |

### **Education**

The growth in clinical practices and research results in increases in the medical staff at the hospital. Each increment of growth in staff requires additional office and support services space. These needs are provided for in a variety of ways, through the release of space when replacement facilities are built, or space leased off site, or newly created space in new buildings, or - at least in ideal fulfillment - they remain partially unmet.

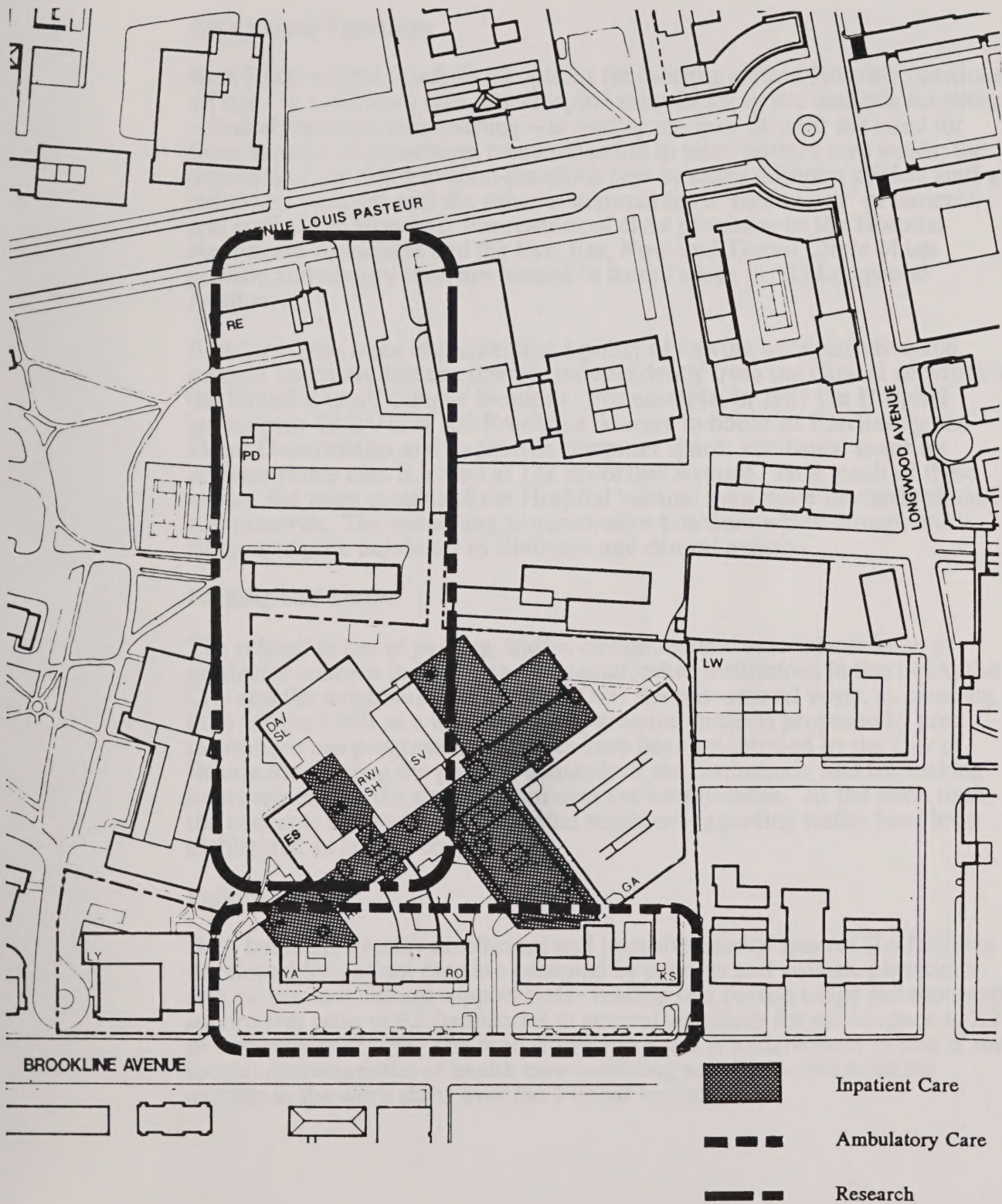
### **Child Care**

A Child Care center, at the Libby Building on Brookline Avenue, opened in April, 1991. This Center provides on-site child care for 120 children of Hospital employees. The new facility is comprised of 5,807 gfa of new construction and 3,540 sf of renovated space. In addition to building the facility, the Hospital provides financial subsidy to employees on the basis of need in order to make tuition affordable to employees at all income levels. The Hospital is committed to operating a center whose users are representative of the entire employee population.

### **Patterns of Activity**

In its development, the patterns of activity on the site have evolved into Inpatient Care facilities radiating from the core of the Gryzmish, Stoneman, Feldberg intersection; Ambulatory Care aligning along Brookline Avenue for easy patient access; and Research at the rear of the site, furthest from patient and public activity. Figure 5 illustrates these zones.





**Figure 5. General Campus Organization - 1992**



## **Off-Campus Functions**

Beth Israel weighs carefully all options for locating certain Hospital functions off site. In evaluating sites, the Hospital must factor in the multiple functions - clinical, research and teaching -- served by many of its staff; the need for close access and convenient communication to serve patient care needs; the demands of providing around-the-clock care by many different clinical staff to individual patients; and the value of maintaining a "community" of patients and staff at the Hospital. For reasons of close proximity to the Hospital Healthcare Associates and the Eye, Ear, Nose and Throat Clinic which provide ambulatory care, are housed in leased space at 333 Longwood Avenue.

Beth Israel has been implementing a policy of moving administrative and support functions that can operate independently from the clinical activities of the Hospital to off campus locations. For example, in 1987 the Hospital leased over 40,000 sf at 109 Brookline Avenue to house its Purchasing and Fiscal Departments and to provide computer space; additional space for administrative uses is leased at 132 Brookline Avenue. As a result of these moves, the main campus of the Hospital became even more intensely clinical and research. The remaining administrative functions which remain on campus require adjacency to clinicians and clinical activity.

## **Parking and Traffic**

The related issues of parking, traffic, circulation and access have been of particular concern to Beth Israel Hospital, other institutions in the LMA, the City and the neighbors of the LMA. Over the past several years, as planning both for the LMA as a whole and for particular projects proposed by area institutions has progressed, priorities have been established by the City of Boston for meeting the parking demands of the institutions, and for making improvements to the street system over the next decades. At the same time, the concerns and needs of residential neighbors regarding traffic have been highlighted as critical concerns.

### **Parking**

Beth Israel Hospital is an efficient and intensive user of space. The facilities developed for patient care are occupied by patients and visitors, physicians and nurses, and clinical support staff - leading to a person usage per thousand square feet ratio of 5.5 (compared to general standards for office space of 2.2 or universities of .75). The intensity of space use is underscored by one of the special characteristics of health care-providing activities -- the need for overlap in the work shifts over the 24 hour workday.

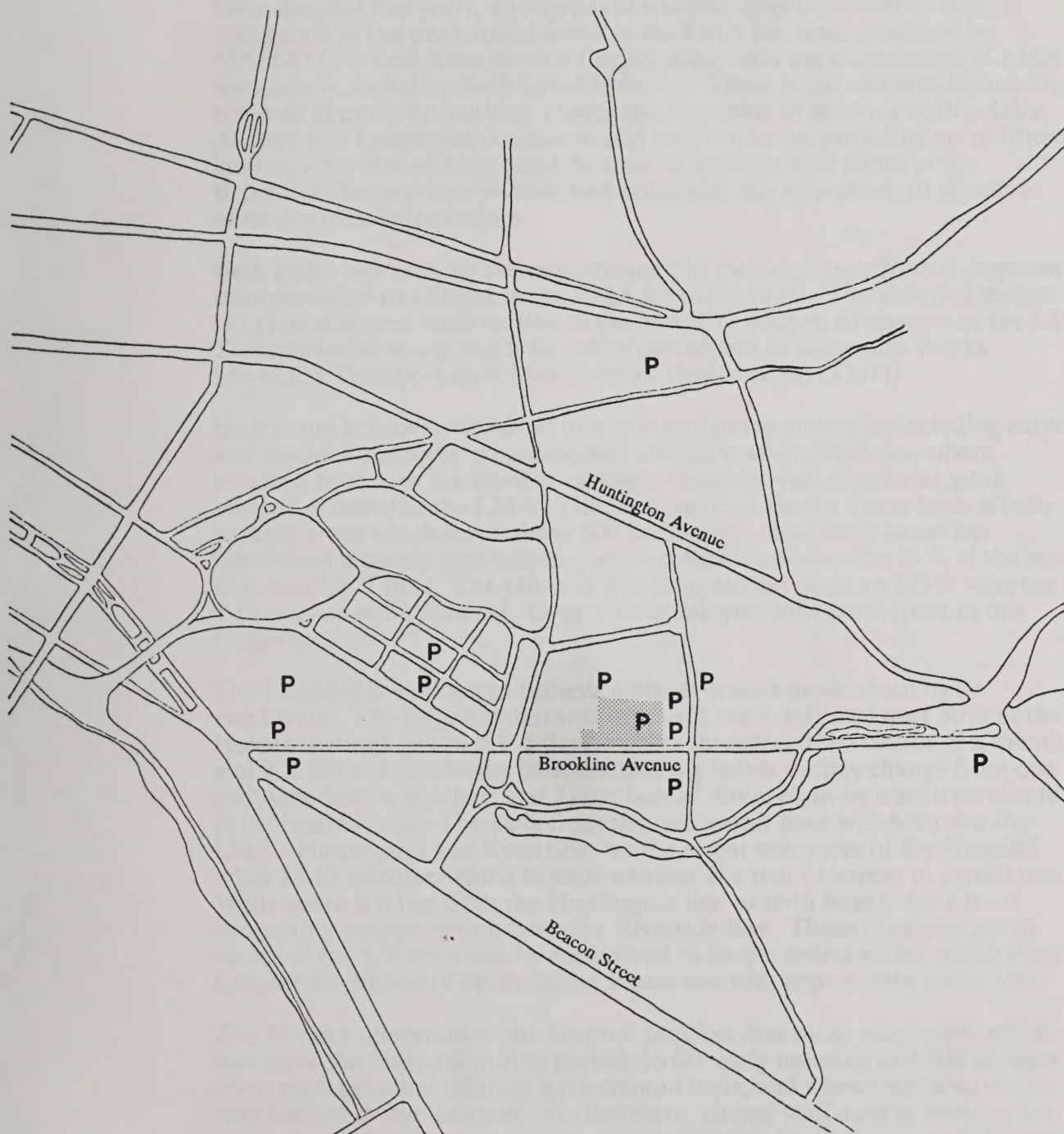


These characteristics of efficient use of space and efficient generation of economic benefits also lead to trip generation rates and parking demands that are proportional to that efficiency. Because of the special needs of hospital patients, visitors and essential hospital personnel, the necessity of providing on-site parking has been recognized by the City of Boston. This has been reflected in campus planning and facilities development for medical institutions in the Longwood Medical Area. Additional parking for other employees and users of the Medical Area is provided off campus and outside the Medical Area. (See Figure 6.)

Beth Israel approaches its planning for parking as it does for health care and research facilities - by siting facilities within an integral campus plan and assigning functions and uses to achieve the most workable arrangements. Because of the limitations of on-site parking options, parking demand is allocated by function and priority to on-site and off-site locations. Beth Israel seeks to meet parking demands generated by new facilities by building on-site spaces for those assigned on-campus priority, and finding off-campus locations for other demand.

Over the past five years, Beth Israel has increased its supply of parking by building and leasing spaces at the deck at Emmanuel College, the Red Sox garage and the Lansdowne garage.







### Traffic Mitigation

Over the past five years, a program of roadway improvements to relieve congestion at the peak travel hours in the LMA has been proposed by MASCO (Medical Area Service Corporation) with the cooperation of LMA institutions, including Beth Israel Hospital. These improvements include the removal of on-street parking spaces and restriping of sections of Brookline Avenue and Longwood Avenue to add left turn lanes, providing an additional lane on a portion of Longwood Avenue to improve operations at the Brookline Avenue intersection; and enhancing the operations of signals at several critical intersections.

Beth Israel has been an active participant in the on-going efforts to improve transportation conditions in the LMA for many years. The Hospital makes the second largest contribution to the MASCO budget, co-sponsored the LMA Transportation Study and is an active participant in Commute Works, MASCO's Transportation Management Organization (TMO).

Beth Israel is actively involved in traffic mitigation strategies including carpool and vanpool matching programs, and alternate work schedules, where possible, to reduce the number of single-occupant vehicles during peak periods of travel in the LMA. The Hospital runs shuttle buses from off-site parking areas which serve about 800 employees. Also Beth Israel has introduced a transit pass subsidy program which underwrites 25% of the cost of a monthly T pass. The effect of this program has been an 125% increase in T pass users at Beth Israel. Over 1100 employees now participate in this program.

The Hospital is working to achieve a higher transit mode share by its employees. The largest deterrents to transit use are 1) that over 50% of the Hospital's employees work different shifts throughout the course of a month and it is difficult to change their commuting habits as they change from one shift schedule to another; and 2) the lack of direct close-by transit service to Brookline Avenue. The walk from the two transit lines which service the LMA - Huntington and Riverside - to the major entrances of the Hospital takes 10-15 minutes, which in poor weather is a real deterrent to transit use. While there is a bus from the Huntington line to Beth Israel, there is no connecting transportation from the Riverside line. These distances are in excess of the 1/4 mile usually considered to be the radius within which there is a higher likelihood of encouraging transit use with appropriate incentives.

The 24-hour operation of the hospital requires that many employees arrive and leave the Hospital during periods in the early morning and late at night when their personal safety is a paramount issue, and when transit service is very limited or non-existent. Furthermore, among staff such as nursing, the "end" of a shift depends upon when each individual completes her or his work, according to their own professional judgment; thus the exit of nurses on the 3 pm - 11:30 pm shift is irregularly spaced from 11:30 PM through 1:30 AM or even later.



### **CHAPTER III. FACILITY NEEDS, 1992-2000**

During the Master Plan period Beth Israel expects to build and lease new facilities to accommodate continuing growth in ambulatory care, inpatient care, research, medical activities shared with other Longwood area institutions, and associated parking. The anticipated facilities include the Southeast Building, The Clinical Center which, by virtue of its development by Beth Israel, will become integrated into the main campus of the Hospital, and, if practicable, space leased off-campus, but nearby, for research.

The location of proposed buildings on campus has been designed to reinforce the current pattern of Hospital activities -- Research, Inpatient Care and Ambulatory Care as shown on Figure 5. Additional GFA will be built at The Clinical Center in the future to achieve full build out of FAR 5.0 established by DCPO as the building envelope on this site.

#### Patient Care

In recent years, dramatic changes have taken place in health care -- as a result of many factors including newer technologies, economic pressures on hospitals and doctors, an aging population, illegal drug use, new diseases such as AIDS, and social issues related to access, insurance coverage, nutrition, housing and education. The way patients are cared for continues to evolve, with inpatient status reserved only for the most sick, with length of stay shortened significantly, and with the pressures for "throughput" of patients markedly accelerated. At Beth Israel Hospital, where the number of patients cared for continues to grow annually, this means that the average intensity of illness on the inpatient unit keeps mounting, and the pace accelerates with little respite. Much of surgery -- about two-thirds of the growing number of cases done each day -- is now either on the basis of "same day admit," that is, the patient no longer enters the hospital on the day prior to surgery but appears instead on the morning of surgery, to move up to the OR within an hour or two and, from the recovery room to second stage recovery, and for the rest, to return home the same day. With shortening of the inpatient length of stay, many admitted surgical inpatients are discharged home on the following day.

Thus, on the inpatient side, the administrative and clinical pressures are to mount an increasingly efficient process of care, accommodate the new technologies, get the results of diagnostic studies back to the physician within hours, and all the while strengthen the warmth and personalization for which Beth Israel is internationally renowned. The planning for space for inpatient services on campus arose out of these pressures as well as the need to replace beds which were below Hospital standard, and to increase the complement of beds. In particular, a new 12-bed intensive care unit to accommodate increasingly ill patients is needed, an increase in and replacement of beds to serve growing demand in the currently substandard psychiatric unit, and spaces to provide for expanded diagnostic and treatment services and related support space, which will also serve to improve the teaching services, and facilities directly related to such changing circumstances.



### **Southeast Building:**

One building scenario would use the Southeast Building to meet many of these growing inpatient demands and it will be designed to accept more space in the future. Located central to that area of the campus where inpatient care is concentrated, it will allow for efficient connections between the new beds and other inpatient facilities, and will continue to allow all inpatients to be served from a central vertical circulation core. The new building will incorporate a new ICU, a psychiatric unit, and enlarged hospital support service facilities such as kitchen and cafeteria (which now exist in space allocated when the bed complement was 376), receiving and warehousing, and increased space for environmental services growth needed to keep the new buildings tidy.

Beth Israel, along with Brigham and Women's Hospital, is a major inpatient facility for obstetrical patients and one of two major providers of obstetrical services for the Harvard Community Health Plan. Neonatal care at Beth Israel is part of a Joint Program in Neonatology with Children's Hospital and Brigham and Women's Hospital. Deliveries at the Hospital have more than doubled over the past 10 years, creating demands not only on Labor and Delivery but, in particular, great demand for neonatal intensive care facilities, a demand not being met elsewhere. Within the past five years, the need for additional facilities to serve mothers and babies at risk has become particularly urgent by virtue of the growth in problems of narcotics addiction, teenage pregnancy, AIDS, and such services provided by Beth Israel as in its relationship with Houston House at the Dimock Community Center, an alternative facility for pregnant women who would otherwise be incarcerated at the Massachusetts Correctional Institution at Framingham. The new Neonatal Intensive Care Unit (NICU) responds both to the need for greater care of high-risk infants at Beth Israel and the growth in volume.

The NICU facility above the roof level of the Stoneman and Gryzmish Buildings, is adjacent to the existing Labor and Delivery Suite on floor 10 of the Reisman Building. It will provide for 25 beds of which 12 are replacement and 10 new, for immediate use, and 3 for additional capacity in the future, housing the NICU and its support services at the tenth level. Floors 8M and 9 house mechanical equipment and offices. Space vacated by the NICU in Reisman 10 will be used for facilities to support the expanded needs of the adjacent Labor and Delivery Suite which was built for a maximum of 4,000 annual deliveries, but which now serves 6,000-6,500 annually.



**The Clinical Center:**

The character of outpatient care has changed as well. With the shuttling to the outpatient setting of some who formerly would have been inpatients, the average intensity of illness increases in this sector, too. Economic pressures for "throughput" and "efficiency" mitigate against taking the time that often is so important, and thus the challenge for warmth and personalization as well as for efficiency arises with equal urgency in this setting. And with the growth in ambulatory surgery -- here, the patient arrives at the Hospital early in the morning, undergoes surgery, spends a few hours in recovery, and then returns home -- clinical involvement in monitoring such patients has grown in major fashion.

Ambulatory care has become a major challenge at Beth Israel for another important reason. At present it is conducted in small areas scattered about the Hospital. This is not efficient for the patient nor for the physician, and more often it can be frustrating for each. But it is our intention not simply to build at the Massachusetts College of Art site a building which relieves our existing problems in the delivery of ambulatory care. Rather, we are presently re-examining its every aspect in order to rework the entire set of systems by which ambulatory care is delivered and supported, in order to render the experience more efficient and pleasant and useful for the patient, more timely and effective for both patient and doctor, and improve the information handling that must accompany the outpatient experience. The Clinical Center at the Massachusetts College of Art site will provide a major opportunity to meet these ambulatory care requirements by providing both clinic and private medical practice facilities and special facilities for diagnostic and other medical procedures and equipment, designed and organized in response to our best systems thinking and our attitude towards patient-centered care.

The Clinical Center facilities will allow the Hospital to centralize and standardize many outpatient programs currently overcrowded and scattered throughout the main campus, thereby improving patient access, efficiency and comfort. It is anticipated that the Center for BreastCare, the Epilepsy Program, the Behavioral Neurology Unit and other focused "centers" (multidisciplinary care units focusing on one specific area of clinical disability) will be housed at TCC. This facility will create the opportunity to respond to the evolving health needs of our local community and to the changing patterns in the practice of medicine, and pays heed to Beth Israel's responsibilities in the evolving complexity of teaching and learning in medicine.

Since the site acquisition, planning and construction process do not permit occupancy at the MCA site earlier than 1995, the immediate need to expand ambulatory care services has resulted in the expansion of existing physicians' suites at the Rabb Building fourth floor onto the adjacent roof. The additional 4,700 sf there provides an interior connection between Yamins 4 academic offices, ambulatory care, the vertical circulation to inpatient units, and research facilities.



Also included at The Clinical Center as a program element related to the Hospital's research activity is the Center for Medical Technology which will be a voluntary, collaborative effort of Beth Israel Hospital, New England Deaconess, Children's Hospital, Brigham and Women's Hospital, Dana Farber Cancer Institute, and Harvard Medical School. It will offer shared equipment for diagnostic and therapeutic use, accessible to all.

In addition, leading-edge testing of new technology will give this Center the opportunity to become a national resource, thereby attracting new commercial relationships for the City and the Commonwealth. The new facilities provided at The Clinical Center which incorporate a variety of medical uses can only serve to reinforce these important health care relationships, and improve the performance of Beth Israel Hospital as a major teaching hospital of Harvard Medical School.

The Joint Center for Radiation Therapy, currently located at the Dana Farber Cancer Institute and at other locations within the LMA, is expected to relocate to The Clinical Center. This Center provides high caliber treatment planning and delivery for radiation therapy. The JCRT has a large resident teaching program, and provides services to many LMA Hospitals.

### Research

Research activity at the Hospital is expanding rapidly. Because of the delay in the Olmsted Project and the termination of space currently leased for research, the need to provide space for laboratories has reached crisis proportions. There is a critical need for about 100,000 SF for research and clinical laboratories to be available for use before January, 1994. In order to meet that schedule the Hospital is in the process of acquiring 110,000 SF at 99 Brookline Avenue (Research North) to relocate existing activities whose leases are expiring and to accommodate expansion in Beth Israel's research activity.

### Education

All actions have consequences, of course, and one of the consequences of these evolutions is a major change in the environment for teaching medical students and training house officers (interns and residents) -- tomorrow's doctors. Yesterday they spent most of their time in the inpatient units and -- when the pace was slower and the patient cohort more representative of the illnesses a typical doctor might see in his or her practice in the community -- the inpatient experience represented a reasonable training milieu. Today, however, the inpatient experience reveals only the more complex and more ill patients, and then only during their most acute and complex phases of illness! The outpatient experience now includes what had formerly been a significant part of inpatient care. Even in the inpatient context, the economic pressures for "efficiency" mandate too little time for the relative leisure a student must have early on in his or her learning process. And even if that did exist, the challenge of connecting the inpatient experience of a patient with that on an ambulatory basis is daunting in and of itself. Thus we must plan to build in systems solutions and therefore, architectural solutions, to facilitate the training of students and house officers, systems which will accommodate as well both the high quality and the personalization of care typical of Beth Israel.



Beth Israel will provide improved systems and facilities for teaching education in both the Southeast Building and The Clinical Center, as described above. In addition, Beth Israel will expand its educational activities not only to the health care professional it already serves, but will also serve the community at large which uses the Longwood Medical Area. Included in The Clinical Center program is a Medical Learning Center to be equipped to serve many audiences: patients of all LMA institutions and their families, residential neighbors, nearby schools and colleges.

We cannot roll back the timeclock. Therefore, as we consider the care needs of today's and tomorrow's patients, and the educational needs of today's students and house officers who are tomorrow's practicing physicians, it becomes imperative that we rationalize and improve all systems of care as fully as possible in both inpatient and outpatient settings, and that we build into our functional systems and their resulting architecture the most "user-friendly" and efficient ways of caring for patients. Our vision has taken us forward to a significant extent so far, particularly on the inpatient side -- Beth Israel was named as one of only three hospitals in a listing of 101 service companies across the nation that provide outstanding service (The Service Edge: 101 Companies That Profit From Customer Care, by Ron Zemke, 1989, New American Library). But further changes must follow, as presented in this Master Plan. We believe this is the forward-looking thinking appropriate for an institution that has become a national model and resource.



## Description of Master Plan Projects

### **The Clinical Center Outpatient Care**

The Clinical Center project encompasses a major new 500,000 GFA building to provide ambulatory care services to patients. It is anticipated to be built in two phases. The first, which is expected to begin construction in 1992, will contain about 325,000 GFA at a height of 168'-5"; the second phase to be built at a later date will contain about 170,000 GFA making the total height 292'-5". Of this total building volume, approximately 70,000 is area elimination and rebuilt within the existing Massachusetts College of Art Building. The building footprint which appears in Figure 8 is 34,000 SF. The first phase uses will include retail, Rehabilitation and a Fitness Center, the Joint Center for Radiation Therapy, Ambulatory Care Clinics and Ambulatory Surgery. Associated with The Clinical Center, and to be built within that project schedule is a connector which will tie together The Clinical Center and the Southeast Building. This will be a two level connector which attaches to the rear of the Kirstein Building and continues alongside Feldberg and the garage terminating at the base of the elevator tower for the Southeast Building. This connector portion of the project is shown on Figure 8; it comprises about 30,000 SF and is integral to The Clinical Center and Southeast Building projects in that it includes at the rear of the Kirstein Building, a portion of the faculty office space to the physicians practicing in The Clinical Center and creates the base of the elevator core for Southeast, as well as an elevator for the existing garage.

The Clinical Center project will also provide additional parking for the Hospital. An underground garage for 930 cars will be constructed as part of this project. The primary function of this garage is to provide parking for the ambulatory care patients and visitors to The Clinical Center.

| Phase | GFA                        | Height of Parapet at<br>Mean Grade of 28'-0" |
|-------|----------------------------|----------------------------------------------|
| I     | 324,649                    | 196'-5"<br>- 28'-0"<br>168'-5"               |
| II    | 169,441 available          | 307'-1"<br>- 28'-0"<br>279'-1"               |
|       | 494,090 GFA<br>for FAR 5.0 |                                              |

Total project costs for The Clinical Center Phase I amount to about \$155.6 million. The development impact payments are calculated at about \$1.1 million for housing and \$225,000 for jobs.



**Research: Olmsted Plaza**

Additional research space will be needed in the near term future but beyond 1994. The Beth Israel's commitment to Olmsted Plaza for about 90,000 SF to meet this additional need remains in place. If Olmsted is a viable project and lease terms remain similar or better than those already agreed to, within the necessary time frame, the Hospital is committed to locate research there. If not, the Hospital will have to locate research elsewhere -- one option is at the Southeast Building on campus.

**Inpatient Care: The Southeast Building**

The Southeast Building has been programmed to serve a combination of clinical needs for the Hospital as well as important support services. The eight story building will house an additional 48 beds authorized by an approved Determination of Need issued by the Massachusetts Department of Public Health. It is also expected to provide additional loading and storage, an expanded kitchen and cafeteria and space for several of the Hospital's Support Service Departments. Detailed uses are shown on Figure 8.

Under current planning assumptions this building will serve these support and inpatient needs. It is planned to be constructed in two phases. The first phase comprises about 120,000 SF and will house the balance of clinical functions. The Southeast Building has a footprint/floor plate of approximately 18,000/27,000 SF as shown on Figure 8 at its proposed location on the campus. The FAR on campus would be about 3.97 upon completion of the Master Plan projects.

Parking for the Southeast Building will be provided within the Hospital inventory described in this Plan. No new parking will be built for the Southeast Building uniquely, under either scenario.

Alternatively, the Southeast Building could be used to meet the need for research space, if the Olmsted Project is not viable. Under this scenario, the building would still serve some clinical and service needs but at a significantly reduced level with the balance of space dedicated to research use. (see Alternative Development Scenario)

**Southeast Building Floors SB-3**

|                                 |         |     |
|---------------------------------|---------|-----|
| Height of building above grade: | 54.75   | ft. |
| Total Gross Square Feet (GSF):  | 110,000 |     |
| Total Gross Floor Area (GFA):   | 77,000  |     |

**Southeast Building Floors 4-9**

|                                 |         |    |
|---------------------------------|---------|----|
| Height of building above grade: | 136.70  | ft |
| Total Gross Square Feet (GSF):  | 130,000 |    |
| Total Gross Floor Area (GFA):   | 113,000 |    |



**Alternative Development Scenario**

Because of the uncertainty associated with development at Olmsted Plaza, the Hospital has considered the following alternative development scenario in order to accommodate the range of needs described above. If a lease for Olmsted Plaza is not forthcoming in the near future, the research activity planned for Olmsted Plaza would instead be built at the Southeast Building, thereby displacing much of the planned clinical care. That care function would then be accommodated by a vertical expansion atop the Feldberg/Reisman building (West II) and/or other buildings on campus that are footed to carry additional floors. While consolidating research at Olmsted Plaza is the preferred option, this contingency plan is necessary in order for the Hospital to plan for its future in an orderly way.

Southeast Building Floors SB-9

|                                 |         |      |
|---------------------------------|---------|------|
| Height of building above grade: | 136.70  | feet |
| Total Gross Square Feet (GSF):  | 240,000 |      |
| Total Gross Floor Area (GFA):   | 190,000 |      |

West II Addition Floors 13-17

|                                 |         |      |
|---------------------------------|---------|------|
| Height of building above grade: | 235.00  | feet |
| Total Gross Square Feet (GSF):  | 110,000 |      |
| Total Gross Floor Area (GFA):   | 88,800  |      |

Early estimates of project cost for the Southeast Building for Phase 1 and for the Alternative Development Scenario are \$44 million and \$86 million respectively. Until the actual uses have been fully defined, the estimated development impact payments cannot be calculated but they will conform to the formulas defined in Article 26.

Schedule for Projects: Start/Complete

|                  |                           |
|------------------|---------------------------|
| Ambulatory       | November 1992/July 1995   |
| Clinical/Support | Spring 1996/November 1997 |
| Research         | To be determined          |

The projects proposed in this Plan are currently in an H-3 zoning district. New zoning for these projects is under discussion with the Boston Redevelopment Authority in conjunction with overall review of land use and development planning for the Longwood Medical Area. The projects are anticipated to be permitted under a new Institutional Subdistrict article within the Boston Zoning Code and the FAR ratios for proposed projects will conform to the density allowed within the zoning. In addition, The Clinical Center is being developed within the framework of a Land Disposition Agreement with the Division of Capital Planning and Operations of the Commonwealth of Massachusetts, a copy of which has been submitted to the BRA. The total cost of the Projects included in this plan amounts to approximately \$400 million.



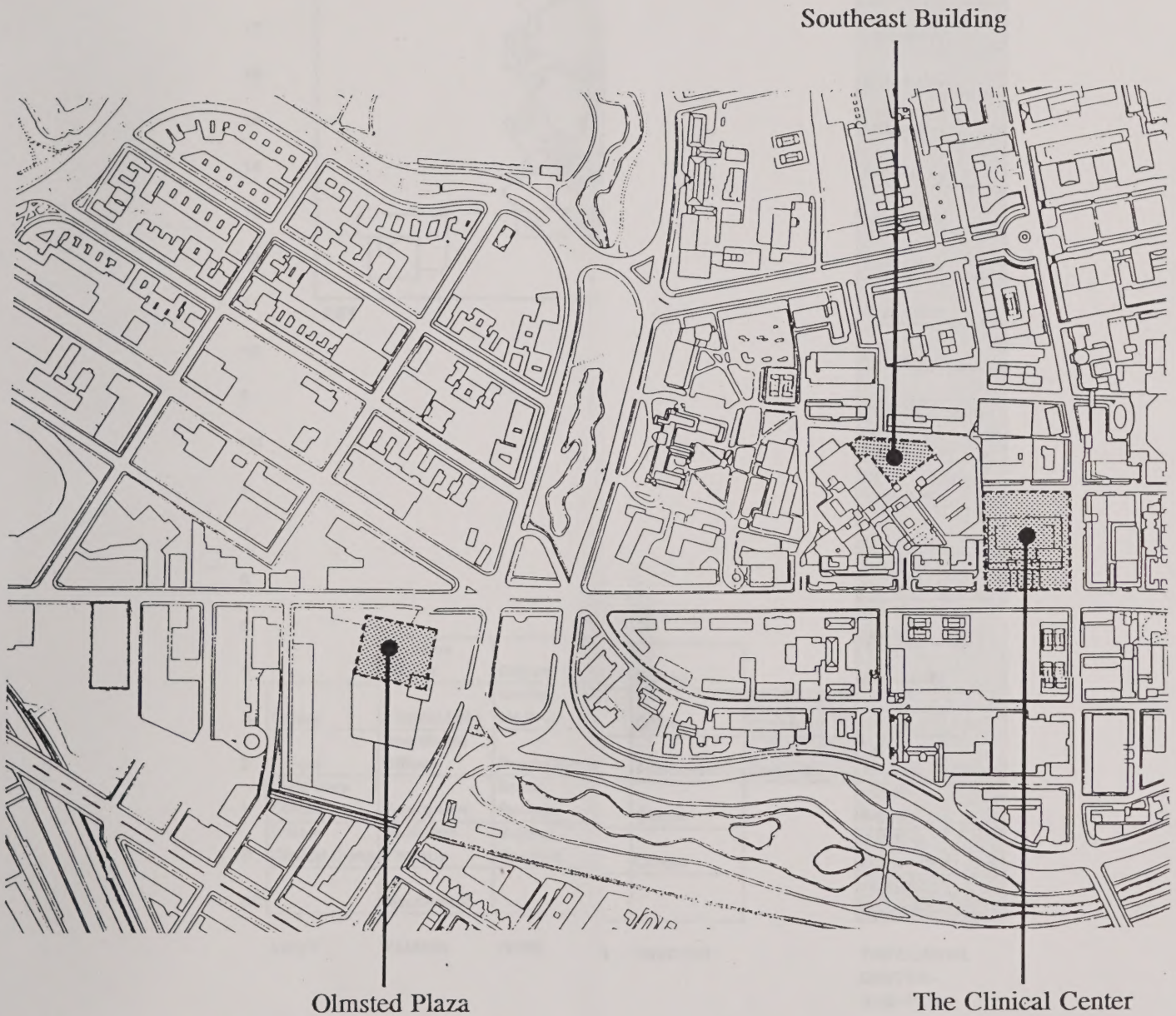
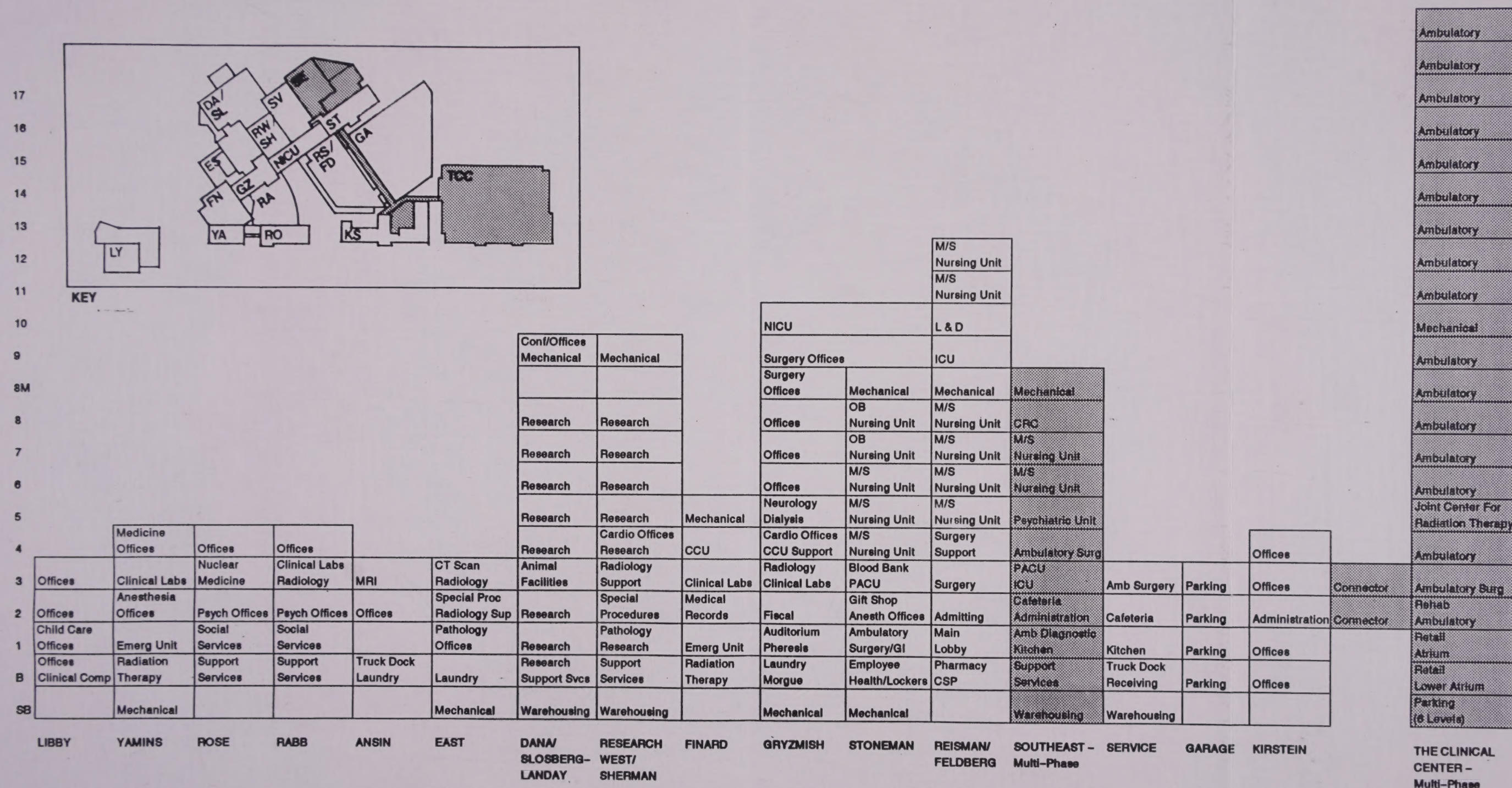


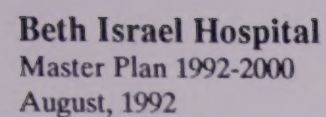
Figure 7. Proposed Projects 1992-2000





**Figure 8. Campus Space Use Profile - Future**





**Figure 9. Campus Space Use - Alternative Development Scenario** page 39



## Circulation

### Pedestrian Circulation

In the design of its facilities, Beth Israel has placed emphasis on providing a clear circulation pattern, and a pleasing pedestrian environment for the patients, visitors and neighbors in and around its campus. Pedestrian improvements are proposed in the Plan at the ground level to clarify access and improve the environment for walkers, and at upper levels within the Hospital to provide links between buildings for Hospital users.

Many pedestrian improvements will accrue from The Clinical Center project. Not only will the open lawn in front of the Building be retained, it will be improved with appropriate landscaping, paving, lighting and signage. The building setback so effectively used by Beth Israel Hospital along Brookline Avenue will be continued here. A fifteen foot wide sidewalk will improve pedestrian movement on Longwood Avenue. Public spaces within the buildings are designed to encourage pedestrian movement through the interior of the block to exits at Brookline and Longwood Avenues and Binney Street. A pedestrian open space network will flow through the three at-grade entrances of the The Clinical Center building into a public Atrium, which is intended to serve as a new "Civic Square" open to all users and visitors in the area.

An upper level connector to the Hospital is planned at Levels 2 and 3 to serve building users. The Clinical Center Level 2 connector will connect with Kirstein Hall, then with the Feldberg 2 public area and in the future to the Southeast Building. Overspanning the Service Drive, it will provide continuous flow through the entire campus because at Beth Israel the second level is a major public level. At Level 3 Ambulatory Surgery at The Clinical Center will connect to Inpatient Surgery in the Feldberg Building. The Southeast Building will provide an entrance to the Hospital from Research East and from Harvard Medical School.





-  Existing Entrances
-  Proposed Entrances

**Figure 10. Pedestrian Routes to Hospital Entrances**



### Vehicular Circulation

Over the past five years, Beth Israel Hospital has been able to create new vehicular circulation options to and through its campus through the leasing and acquisition of adjacent properties. With the opening of Research East and the parking deck on the adjacent Emmanuel College campus, (the latter shared with Children's Hospital), a new access point for Beth Israel employees who use those facilities has been opened onto Avenue Louis Pasteur. The development of The Clinical Center site by Beth Israel Hospital opens up an access route to that site for Hospital personnel, by using the adjacent Beth Israel Service Road.

Additional options exist for improved traffic circulation within and through the Beth Israel Campus to reroute vehicles into and out of the parking facilities onto both Avenue Louis Pasteur and Brookline Avenue. These are shown on Figure 12. While they are included as part of this Master Plan, Beth Israel does not control all the properties through which these routes pass. However, the Hospital, through MASCO and in cooperation with the other institutional and municipal owners, is interested in pursuing further exploration of these routes to promote new circulation options within the Longwood Medical Area. The most promising option for improved circulation to Avenue Louis Pasteur is alongside English High School. Since English High is slated for disposition by the City of Boston, Beth Israel, along with others, is exploring ways to make this route practicable as soon as possible.

In addition to serving the LMA hospitals, local streets carry regional through traffic travelling into and out of the city. Brookline Avenue, which passes in front of Beth Israel, is a two-way arterial roadway which carries 28,000 vehicles per day. Longwood Avenue, carries 14,000 vehicles per day. Binney Street, a narrow, local street, begins as a dead-end street behind The Clinical Center site and provides local access to Children's Hospital, Dana Farber Cancer Institute, and Brigham and Women's Hospital. Avenue Louis Pasteur is a less used two-way street providing a connection between Longwood Avenue and the Fenway. Access to the Emmanuel College parking deck is provided via Avenue Louis Pasteur.

MASCO's Longwood Medical Area Transportation Study proposed transportation strategies to overcome deficiencies in capacity to serve existing traffic. Among the recommended strategies was the reallocation of pavement from curb-side parking on Brookline and Longwood Avenues to turn lanes and through travel lanes. The first phase of this plan, which was endorsed and partially funded by Beth Israel, was implemented in August/September 1990. 22 parking meters were removed from the sidewalk along Brookline Avenue to the south of the Beth Israel Emergency Entrance and parking meters were also removed from segments of Longwood Avenue.



Soon after the change was implemented, Beth Israel commissioned a study to count actual traffic volume at the Brookline/Longwood intersection and to measure the effectiveness of the additional lane capacity on Brookline Avenue in reducing congestion. Peak hour turning movement counts were taken at the intersection of Longwood Avenue and Brookline Avenue during the week of September 24, 1990. Since similar traffic counts had been taken in 1987 and 1988, the 1990 counts can be compared with them, and with traffic projections for other recently constructed projects in the LMA to see traffic trends.

The data in Table 4 shows that traffic at the intersection in 1990 is lower than what was projected for this intersection in earlier studies. Not only is traffic volume lower than projected, it is lower than actual traffic volumes experienced in 1988 at the AM peak, and lower than actual traffic at the PM peak in 1987. It should be noted that the 1990 counts reflect construction activity at Harvard Medical School and at the MASCO Mixed-Use Project.

These traffic analyses have been supplemented by a full traffic study scoped by the Boston Redevelopment Authority and Boston Transportation Department and prepared by Beth Israel Hospital in a Draft Project Impact Report dated March, 1992. These analyses include the Southeast Building as a background condition. (cf Southeast Building EIR, Draft and Final; EOEA #7406; September, 1989 and June, 1990)

### Transit Improvements

Beth Israel has worked with the MBTA and its consultants to coordinate the design of the underground garage at The Clinical Center with proposed subway alignments and station locations along Longwood Avenue for the "Bio-Tech Line" also known as the circumferential transit system. Also Beth Israel has designed a narrower profile for The Clinical Center garage to allow a better track curvature at the corner of Brookline and Longwood Avenues. Beth Israel's commitments to facilitate this construction are contained in a letter to the General Manager of the MBTA from Beth Israel President, Dr. Mitchell Rabkin, dated April, 1991.



Table 4

**Entering Traffic Volumes: Actual vs. Projected  
Brookline Avenue/Longwood Avenue Intersection**

|                   | Actual |       |       | Projected* |
|-------------------|--------|-------|-------|------------|
|                   | 1987   | 1988  | 1990  | 1990*      |
| Morning Peak Hour | 2,485  | 2,691 | 2,533 | 2,727      |
| Evening Peak Hour | 2,660  | 2,294 | 2,649 | 2,878      |

\* Intersection volumes if traffic levels projected for recently constructed projects had been realized.



Table 5

**Level Of Service Analysis  
Brookline and Longwood Avenue Intersection <sup>1</sup>**

|                         | <u>Morning Peak Hour</u> |       |     | <u>Evening Peak Hour</u> |       |     |
|-------------------------|--------------------------|-------|-----|--------------------------|-------|-----|
|                         | V/C                      | Delay | LOS | V/C                      | Delay | LOS |
| Existing (1990)         | 0.74                     | 20    | C   | 0.79                     | 33    | D   |
| No-Build (1995)         | 0.98                     | 33    | D   | 0.92                     | 60+   | F   |
| Build (1995)*           | 1.07                     | 53    | E   | 0.99                     | 60+   | F   |
| Build Improved (1995)** | 1.00                     | 31    | D   | 0.93                     | 27    | D   |

V/C = Volume to Capacity, Delay is in seconds,

\* As part of The Clinical Center development, a right-turn lane will be added to Longwood Avenue westbound approach to Brookline Avenue.

\*\* Improvements are associated with retiming traffic signals to reflect future traffic volumes.

<sup>1</sup> It should be noted that the volumes used for the analysis are conservative (meaning high) because the no-build traffic volumes include some projects which have already been completed and are counted in the current volumes. In other words, the traffic volume forecasts made for the LMA Transportation Study were too high (as is shown on Table 4). But to be conservative, these projects are still included on the "future development list" and are reflected in the LOS analysis.



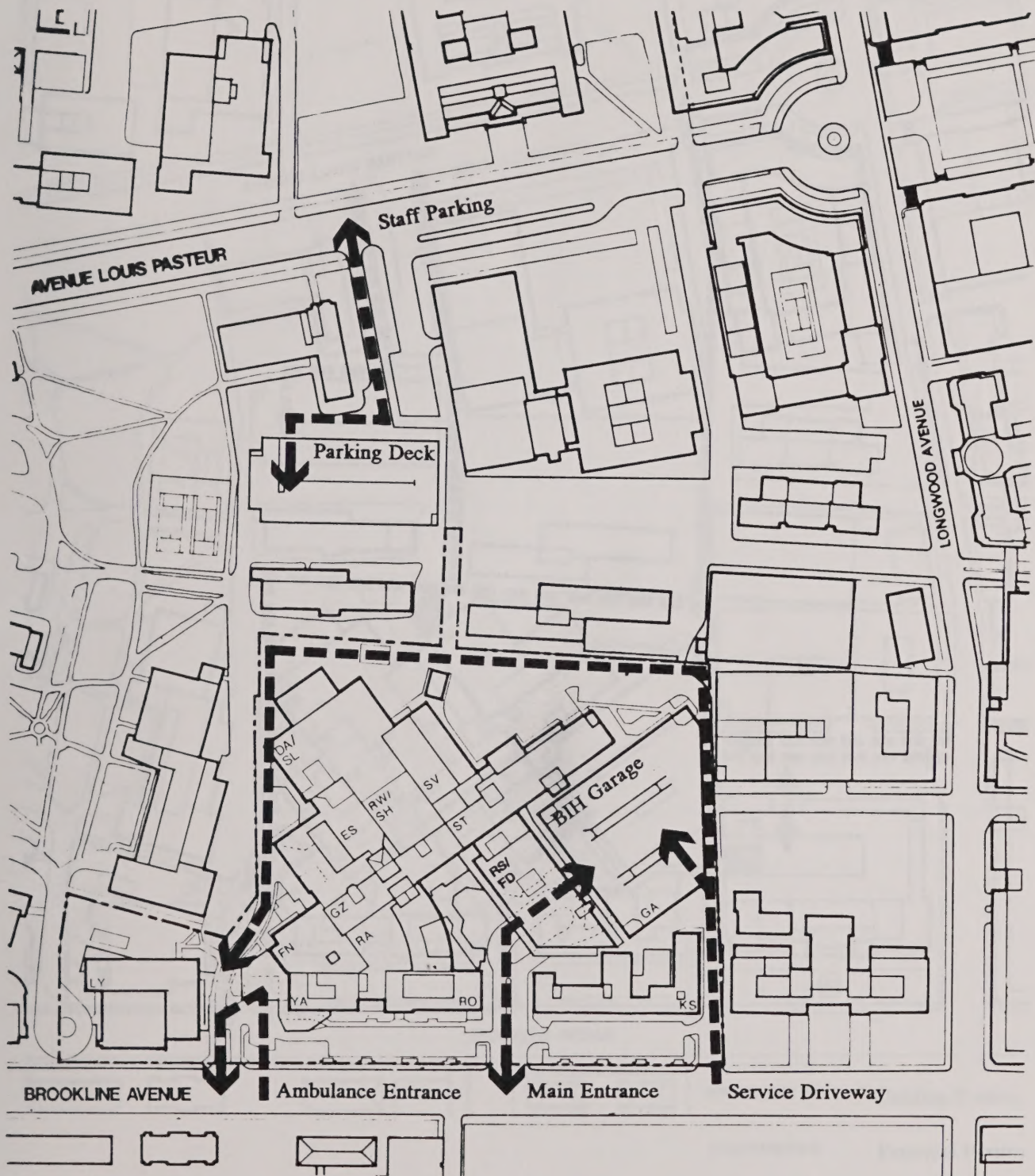
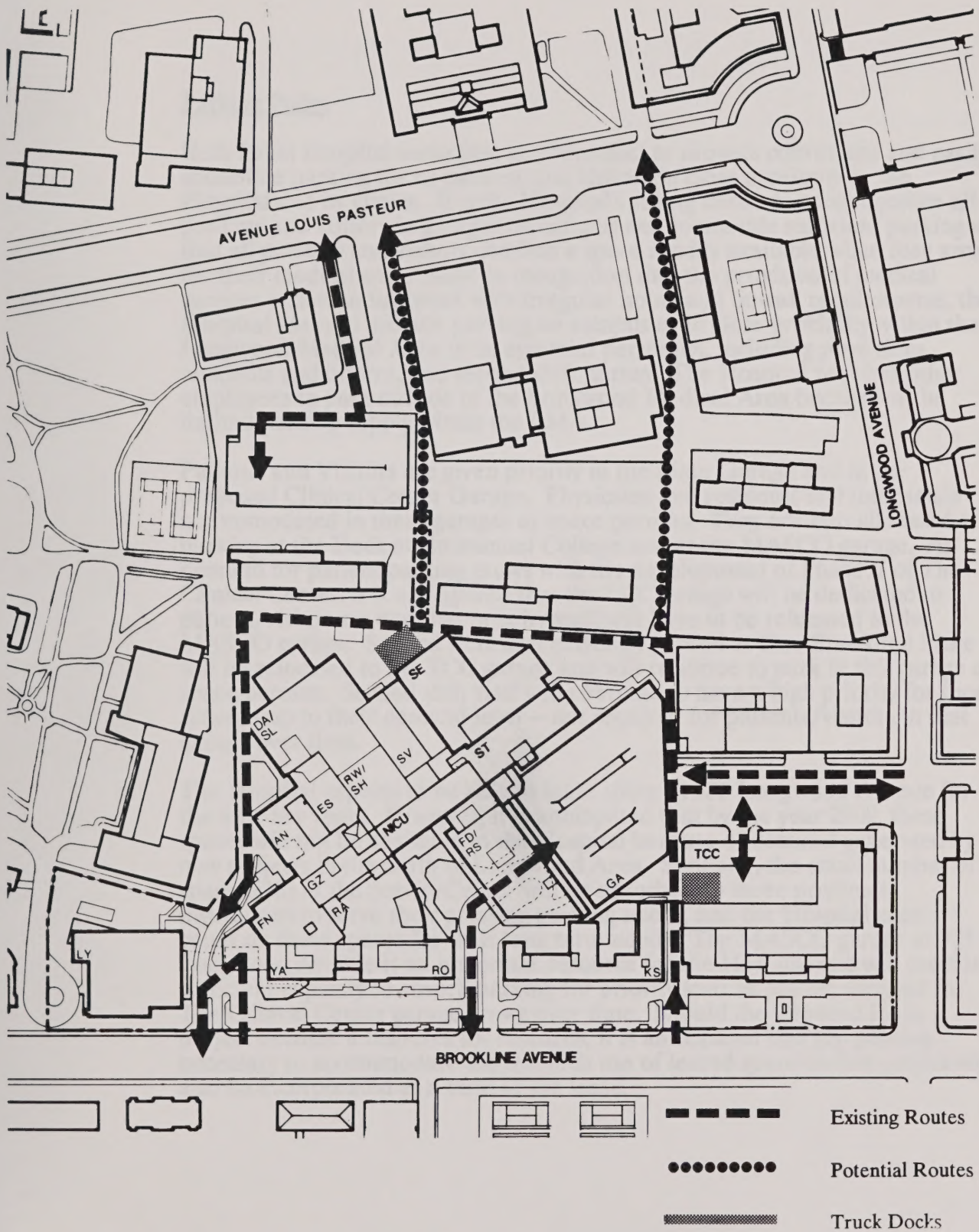


Figure 11. Vehicular Circulation - 1992





**Figure 12. Potential Vehicular Circulation Options**



### Parking Policy

Beth Israel Hospital seeks first and foremost to provide convenient and easily accessible parking for its patients and visitors in close proximity to the Hospital and its clinics. It is the Hospital's strong desire to accommodate all patients and visitors in garages on campus and to provide sufficient parking so that all patients and visitors can find a space readily available when they arrive for their medical care. Also, in recognition that the provision of medical services is demanding work with irregular hours and on-call requirements, the Hospital seeks to provide parking on campus or in close proximity within the Longwood Medical Area to its essential personnel, including physicians, residents and interns, and second shift nurses. The Hospital requires other employees to park outside of the Longwood Medical Area because of the limited parking supply within the LMA.

Patients and Visitors are given priority in the Main Garage and in the proposed Clinical Center Garage. Physicians and residents and interns are accommodated in these garages as space permits. They are also allocated parking at the Deck at Emmanuel College and at the MASCO garage. As demand for patient parking grows with the development of Phase II of The Clinical Center, it is anticipated that the TCC garage will be dedicated to patient/visitor use and that priority staff will have to be relocated to the MASCO garage. Second shift staff currently parked at One Brookline Place will be relocated to the TCC garage and will continue to park in this garage as space permits. Second shift staff will continue to have a high priority for those spaces - up to their demand level -- not required for patients/visitors in that garage over time.

The Hospital expects to be able to lease space at 333 Longwood Avenue for the next few years. However, it is anticipated that by the year 2000, these spaces will not be available to the Hospital because of demand generated by new projects in the north of Longwood Area. Similarly, the small number of spaces (36) at the ServiceCenter will be absorbed by more proximate institutions to serve their pressing parking needs, and the Hospital cannot count on these spaces for their long term needs. The MASCO garage at 375 Longwood Avenue is an important resource for the Hospital and will provide sufficient capacity to absorb parking for priority staff as patient demand for The Clinical Center garage grows over time. Should the Olmsted Plaza project become a resource for research, it is anticipated that the parking necessary to accommodate the research use of leased space in that project will also be incorporated as a term of the lease.



The parking supply outside the LMA for employees continues to lag behind demand. Even though the Hospital expects an ever increasing percentage of employees to use transit, the demand for employee parking will grow somewhat as job growth occurs, and the deficit in parking supply will increase. In order to respond to demand for employee parking, the Hospital will continue to work with others -- including MASCO, the City of Boston, other institutions, the Turnpike Authority and property owners at remote locations along the transit and roadway networks leading to the LMA -- to identify where and how this supply can be supplemented.

Beth Israel will need additional parking to serve the projects proposed in this Master Plan. The increase in supply proposed in this plan is that which is needed to serve patients, visitors and essential personnel in a workable manner, after mitigation measures to reduce vehicle trips to the Hospital campus have been incorporated into the equation. It is important to note here that the parking proposed at The Clinical Center will ultimately serve on campus demand generated by patients and visitors using the fully built Clinical Center and the Southeast Building. When the full FAR is built out, spaces used in the garage in intervening years by residents and second shift will have to be reallocated to accommodate these buildings' users at that time, and new options for existing users will have to be provided.

The Master Plan projects increase the demand for on-site parking to about 2000 spaces. The increase in demand is proposed to be met by constructing a 930 space garage underground at The Clinical Center for ambulatory patients and visitors, and essential personnel. The 930 spaces represent a net increment of 613 spaces to the Hospital's inventory. This net figure is computed by subtracting from the 930 space capacity of the new garage, the 138 spaces currently on the MCA site, the 150 spaces from the Stoneman lot which was decommissioned to serve as the staging area for the NICU project construction and will be the future site of the Southeast Building, and 29 spaces on the Kirstein lot which will be landscaped to extend the green frontage along Brookline Avenue.

The additional spaces will satisfy existing unmet demand and demand generated by the Master Plan projects for on-campus parking. By satisfying this demand, the Hospital hopes to reduce as much as possible unnecessary drop-off and pick-up trips. These extra round trips can very likely be significantly decreased by providing sufficient, convenient parking.



### Parking Demand

Demand for parking by patients and visitors is estimated by assigning to the projections for patient activity over the next ten years the mode share, length of stay and peak hour coefficients that have been identified in surveys of patients, the most recent having been completed in 1989. These coefficients have been documented in the Draft Project Impact Report for The Clinical Center. It is anticipated as care shifts increasingly to the ambulatory setting, that these factors may change and it will be necessary to monitor patient behavior and to update surveys to determine if the pattern anticipated actually occurs when The Clinical Center is in operation.

The 1992 demand for patient and visitor parking totals about 500 cars at peak hour; this demand will continue to grow throughout the decade with an anticipated growth in patient/visitor demand reaching almost 1100 cars with the full buildout of The Clinical Center and the Southeast Building. Other priority parking demand will exceed 850 cars for a total LMA demand of about 2000. These demand levels correspond to about 535,000 SF of inpatient space and 155,000 SF of outpatient space in 1992, and an anticipated increase to about 650,000 SF and 430,000 SF of inpatient and outpatient space respectively with the completion of the Master Plan Projects. Research space is anticipated to grow by well over 200,000 SF in this same period. Over 60,000 SF is leased off campus for administrative activities. The fact that the increase in demand for parking is not at all proportionate to the growth in facilities is testimony to the anticipated success of the Hospital's travel demand strategies and parking policies.

The components of parking demand from patients, visitors and employees over the period of implementation of Master Plan Projects are shown on Tables 6 and 9. This demand will be generated by the activities that take place throughout the Hospital as inpatient days reach to over 200,000 and outpatient visits from all activities grow to over 700,000.

Beth Israel currently has about 5300 employees and that number is anticipated to grow to nearly 6200 with the completion of the Master Plan Projects. The current employee profile consists of about 380 physicians, 1280 nurses, 500 residents and interns, and about 3200 other staff. At any one time about 25-30% of the nurses are working second shift.

It is important to note that most Hospital staff -- both clinical and administrative -- provide services across the full range of Hospital activities. For example, physicians, residents and interns are engaged in clinical and hospital care, education and research; administrative staff provide the full range of fiscal, personnel and other support functions to the entity that is Beth Israel Hospital -- and for the most part, their activities cannot be allocated along in-patient/out-patient lines. The same is true for housekeeping, maintenance and other support functions.



The above categories of employees use non-auto modes for commuting to work with the following pattern discerned by a 1989 survey: Nurses/24.5%, Residents and interns/16%, Physicians/9.5%, and Other staff/50%. This breakout results in a Hospital-wide average of 38% of all work trips that are not auto trips. These non-auto modes include MBTA, MASCO shuttle, bicycle and walking.

The Hospital is embarking on a Walk-to-Work program which will encourage employees, especially new employees, to live in the neighboring areas of Mission Hill and the Fenway as an important way to reduce reliance on the auto to get to work. This program, in combination with a larger T pass subsidy, supplemented MASCO shuttle service and other CommuteWorks services, is anticipated to encourage an even greater percentage of employees to use non-auto means for getting to work. The nearest goal has been set for 1995 and looks to increase the non-auto work trips to 43%. Also the Hospital will be providing information to patients and visitors to acquaint them with non-auto modes available to them.

#### Parking Supply

The Hospital relies presently on its Main garage and the Deck at Emmanuel College as its major supply of parking for priority users on and immediately adjacent to its campus. In order to accommodate the growth in hospital activity generated by the expansive growth represented by the Projects in this plan, the Hospital will need another garage on campus to serve priority users and that has been proposed in this plan as a 930 space garage under The Clinical Center. The need for this garage is documented in the demand Table 6 reference above.

Employee parking is provided off-campus. No new employee parking has been identified to serve the growth in employee demand that will be generated by the Master Plan Projects. While the Hospital estimates that growth in employee demand for parking will be dampened substantially by its aggressive policies for travel demand management, there will still be employees for whom there is no other option for getting to work than driving.

In reviewing the available supply of parking, the Hospital takes a comprehensive look at the continuing relationship between demand and supply and takes into account the incremental changes that will occur in each, and the long range situation as it emerges over a 10-15 year period. This long-range view is particularly important in building underground parking since that supply cannot be added to incrementally to accompany other building projects. Also the Hospital has assessed the availability of spaces currently leased within the LMA to determine the overall supply that it can count on to meet its operating needs. LMA parking facilities at 333 Longwood and the Servicecenter are under heavy demand and Beth Israel cannot get assurances that these spaces will continue to be available; the same is true for spaces leased from month-to-month outside the LMA at One Brookline Place. The spaces leased at 375 Longwood Avenue will serve priority parkers. There may be an interim period before the full-buildout of The Clinical Center when all of these spaces are not needed for Beth Israel's priority parkers, but proper



planning requires that we conserve these spaces in anticipation of the time -- which has already been identified at full-buildout of The Clinical Center -- when all of these spaces will be filled by Beth Israel's priority users. Beth Israel will seek to make these spaces available to LMA priority parkers during any such interval. A change in the number of parking spaces effected by restriping of a parking garage shall not require an amendment to this Plan, but may proceed upon submission to the BRA of a revised parking plan setting forth the need for restriping of such garage.

Because of the uncertainty associated with the Olmsted Plaza Project the Hospital cannot identify the location of parking to serve its staff which might occupy that project, however, the Hospital will draw on its existing supply to accommodate any new parking demand associated with the off-campus projects at Research North. The supply of parking anticipated to be available to meet the cumulative demand from the Master Plan projects is presented in Tables 7 and 8.

Within the time frame of this Master Plan the parking supply will continue to be a matter of debate and interest. Beth Israel will be an active participant in that arena and a contributor to finding solutions to serve legitimate parking needs. As public agencies firm up plans for a garage on air-rights over the Turnpike, Beth Israel expects to be one of many institutions to participate in its use under acceptable terms. Under the planning and implementation umbrella of MASCO, Beth Israel will continue to enthusiastically support and promote the siting of remote parking with shuttle bus connections to the LMA as it has done in the past.

Parking fees at facilities used by Beth Israel's patients, visitors and employees fall within the general LMA "market" for both weekly rates for employees and daily rates for members of the public. Beth Israel charges \$15.00 as its daily rates for use of its garage, which falls with the range found in the LMA for other similar garage of \$12-16.00. For employees either on-campus or immediately adjacent the cost on a weekly basis is \$19.85-24.95 (with one exception that is now under review) and that range can be compared to the \$16.60-31.00 that is charged in the LMA to similar users. Off campus in the Fenway the weekly charges to Beth Israel employees range between \$11.05-13.80 compared to the overall range of 10.40-18.25; and elsewhere Beth Israel charges \$10-14.00 compared to \$7.50-18.25 overall.



Table 6

**On-Site Parking Demand**

| <u>DEMAND ELEMENTS</u>          |            |      |
|---------------------------------|------------|------|
| 1992 DEMAND (EXISTING)          |            |      |
| Patients/Visitors               | 515        |      |
| Physicians                      | 595        |      |
| Second Shift Nurses             | <u>150</u> |      |
| Subtotal                        |            | 1260 |
| CLINICAL CENTER DEMAND          |            |      |
| Physicians                      | 70         |      |
| Patients/Visitors               | 250        |      |
| Delivery                        | <u>10</u>  |      |
| Subtotal                        |            | 330  |
| FUTURE DEMAND THROUGH 1995      |            |      |
| Second Shift Nurses             | 20         |      |
| Residents/Interns               | <u>22</u>  |      |
| Subtotal                        |            | 42   |
| DEMAND GROWTH 1995 THROUGH 2000 |            |      |
| Clinical Center Phase I         | 0          |      |
| Southeast Building Expansion    | 38         |      |
| Phase II Clinical Center        | 270        |      |
| Other                           | <u>30</u>  |      |
| Subtotal                        |            | 338  |
| CUSHION                         |            | 30   |
| TOTAL DEMAND                    |            | 2000 |



Table 7

**On-Site Parking Supply**

|                  | Physicians/Nurses | Pat/Visitors | Total      |
|------------------|-------------------|--------------|------------|
| <u>On Campus</u> |                   |              |            |
| BIH Garage       | 94                | 390          | 484        |
| Emergency Lot    | -                 | <u>10</u>    | <u>10</u>  |
| Subtotal         | <u>94</u>         | <u>400</u>   | <u>494</u> |
| <u>Nearby</u>    |                   |              |            |
| Emmanuel Deck    | 200               | 0            | 200        |
| 375 Longwood     | <u>286</u>        | -            | <u>286</u> |
| Subtotal         | <u>486</u>        | <u>0</u>     | <u>486</u> |
| <br>TOTAL SPACES | <br>580           | <br>400      | <br>980    |



Table 8

**Clinical Center Garage Requirements**

|                            |            |
|----------------------------|------------|
| Demand                     | 2000       |
| <u>Existing Facilities</u> | <u>980</u> |
| Difference                 | 1020       |
|                            |            |
| Clinical Center Garage     | <u>930</u> |
| Deficit                    | 90         |



Table 9

**Off-Site Parking Supply/Demand****EMPLOYEE DEMAND**

|                                |            |      |
|--------------------------------|------------|------|
| 1992 Employee Demand           | 1112       |      |
| Clinical Center Demand-Phase I | <u>232</u> |      |
| TOTAL                          |            | 1344 |

**PARKING SUPPLY**

|                     |            |     |
|---------------------|------------|-----|
| Queensbury Garage   | 81         |     |
| Kenmore Red Sox Lot | 294        |     |
| Wentworth Institute | 180        |     |
| Red Sox Garage      | 150        |     |
| Lansdowne Garage    | 25         |     |
| Boylston Lot        | <u>115</u> |     |
| TOTAL SUPPLY        |            | 845 |
| Difference          |            | 499 |



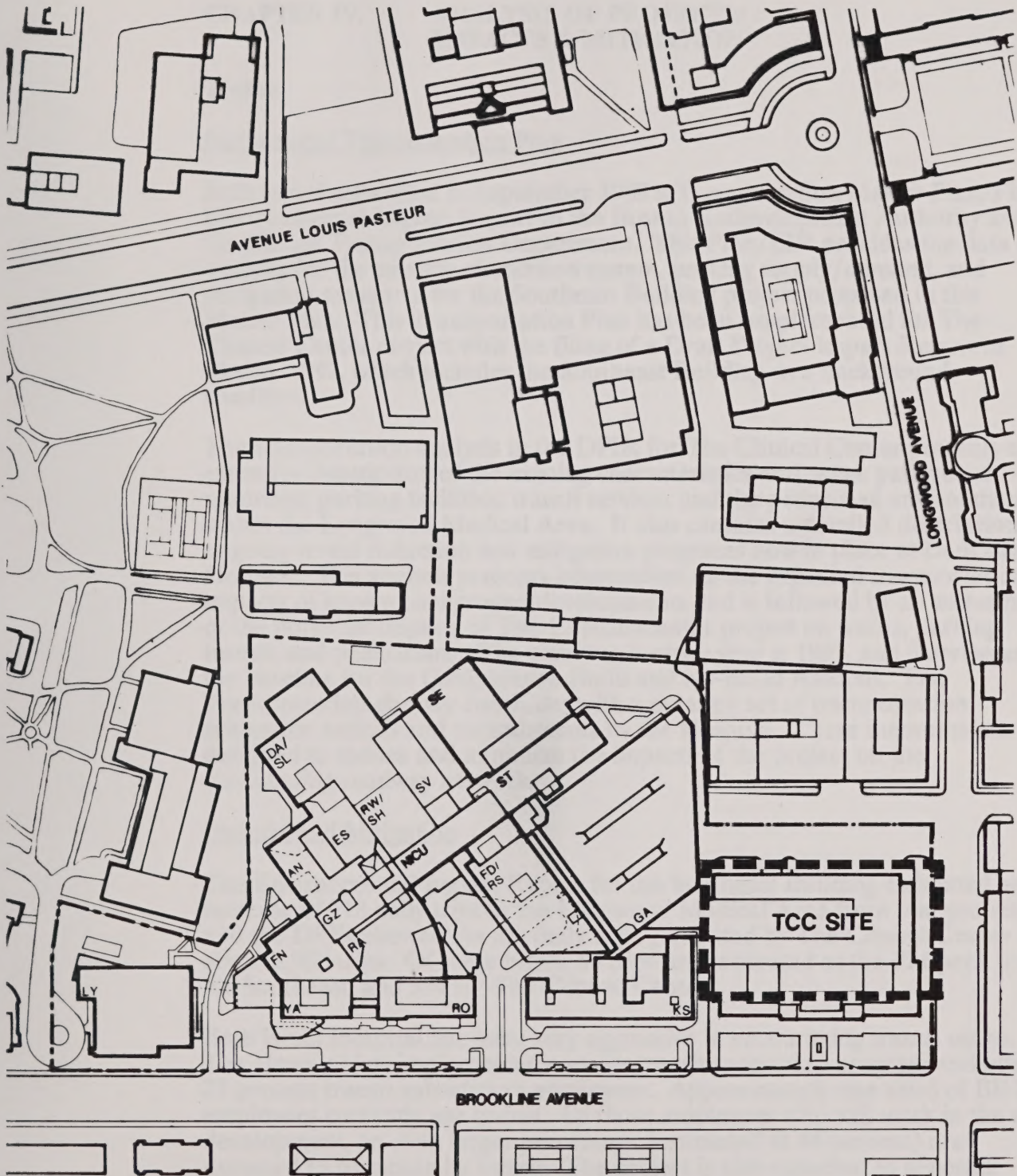


Figure 13. On Campus Parking for Master Plan Projects



## **CHAPTER IV. ANALYSIS OF PROJECTS: IMPACTS & MITIGATION**

### **Traffic**

#### Institutional Transportation Plan

Beth Israel submitted in September 1989 a Transportation Master Plan/Final Environmental Impact Report to the Boston Redevelopment Authority and the Boston Transportation Department. This Plan/EIR provides the data and analysis for the existing circulation system, parking supply/demand, and mitigation measures for the Southeast Building project proposed in this Master Plan. This Transportation Plan has been supplemented for The Clinical Center project with the filing of a Draft Project Impact Report in March, 1992, which includes the Southeast Building as a background condition.

The transportation analysis in the DPIR for The Clinical Center presents an extensive description of the existing characteristics and usage patterns of roadways, parking facilities, transit services and the pedestrian environment within the Longwood Medical Area. It also contains a detailed description of ongoing travel reduction and mitigation programs now in place at Beth Israel Hospital. The analysis presents information on the expected transportation impacts of known background developments and is followed by an assessment of the potential impacts of The Clinical Center project on traffic, parking, transit, and pedestrians. The planning horizon year is 1995, and it serves as the baseline for the Comparative Build and No-Build Analysis. The Transportation chapter concludes with a detailed set of transportation mitigation actions and commitments by the Hospital. These measures are designed to reduce and minimize the impacts of the project on the surrounding roadway network.

#### Impacts and Mitigation

The Environmental Impact Report for the Southeast Building estimated an increase of 718 daily trips in the Longwood Medical Area from that project and the DPIR showed the net daily trips generated by The Clinical Center at about 2,900 trips. Of these totals, 50 trips are generated at the PM peak hour for Southeast, and 374 for The Clinical Center.

Beth Israel Hospital has been very aggressive in encouraging transit usage. The Hospital has implemented a major transit promotion program and offers 25 percent transit subsidies to employees. Approximately one-third of BIH's employees currently use transit. Of those employees who will work in the new development, an even larger percentage (estimated at 44 percent) are expected to commute by transit. The project is also expected to generate 1,178 daily transit trips; 187 during the morning peak and 187 during the afternoon peak.



The major source of congestion on most LMA area roadways is through traffic travelling to Downtown, Cambridge and other points. The new vehicle trips added by the project, when distributed through the Longwood Medical Area, are expected to have a limited impact on intersection operations during the commuter peak hours. A detailed level-of-service analysis was conducted for existing and 1995 conditions at seven intersections. The results of the analysis indicate that most intersections studied would operate at a higher level of service with The Clinical Center and the implementation of the proposed mitigation actions than they do today.

The project has many important features built into its design to mitigate localized traffic impacts. They include:

- o Constructing an additional lane on Longwood Avenue between Binney Street and Brookline Avenue;
- o Upgrading Binney Street to three lanes and the installation of a traffic signal at its intersection with Longwood Avenue;
- o Connecting Binney Street to the Beth Israel Service Drive to expedite entering and existing traffic flow;
- o Using the existing Service Drive to provide additional circulation to the garage, and loading/service access; and
- o Signal timing adjustments to improve traffic operations at several LMA intersections.

### Mitigation

Beth Israel Hospital has carefully studied the transportation-related issues associated with impacts from the proposed Clinical Center development. Although some impacts on the transportation system are anticipated, the Hospital has identified and committed to an extensive program of transportation mitigation. These actions address both the impacts of the project itself and a number of existing transportation deficiencies. The Hospital takes seriously its role in managing traffic conditions within its control, and is committed to implementing the proposed mitigation actions. The Mitigation section of the Transportation chapter of the DPIR (3/92) provides detailed descriptions of proposed mitigation actions and their expected results.



The strategies available to improve overall traffic operations in the LMA have been described in detail in the LMA Transportation Study directed by MASCO, in which Beth Israel was an active participant. In addition to the mitigation measures mentioned above, Beth Israel has supported actively the following measures which would improve traffic conditions in the area:

- Remove parking meters to provide additional lane capacity on Brookline and Longwood Avenues.
- Enhance the effectiveness of the Longwood Avenue and Riverway traffic signal.
- Furtherance of the studies and actions necessary to plan and build the circumferential transit system to serve the LMA.

### **Environmental Impacts**

The proposed Beth Israel Master Plan developments at The Clinical Center and the Southeast Building should have few environmental impacts. The following have been studied in the Environmental Impact Report for the Southeast Building, (The EIR process for that building has been completed and the Secretary of Environmental Affairs for the Commonwealth has issued a Certificate of Compliance for that project.) and the DPIR for The Clinical Center.

#### Infrastructure Systems

Storm drainage is adequate and little if any additional runoff is expected since most project areas are currently largely impervious surfaces.

The proposed development of the site will result in beneficial changes to existing drainage patterns, constituting significant water quality and infrastructure improvements. The benefits of this project will include the elimination of existing storm water discharges to sanitary sewers from the site, reducing storm water inflow to existing Boston Water and Sewer Commission (BWSC) sewers and increasing area sewer capacity. Additionally, with the elimination of the existing at-grade vehicular parking area, water quality of site runoff will be significantly improved; drainage runoff from the existing at-grade parking lot will be replaced by rooftop runoff, which does not contain pollutants normally found in parking lot runoff.



The principal effect of the project on water quality conditions in the Muddy River and the Charles River will be positive due to the improvement in the quality of storm water discharged to combined sewers (sewers which carry both storm water and sanitary sewage). This will decrease the volume of site drainage generated during storm events to combined sewers and thus, it will reduce the frequency and volume of combined sewer overflows. Further discussion on this topic can be found in Appendix E, Infrastructure Systems Analysis of the Draft Project Impact Report, March, 1992.

Projected sanitary sewage impacts will be minimally affected by the Southeast project which will add approximately 64,000 gallons per day.

### Water

Beth Israel has been incorporating its own method of infiltration/inflow removal over the past eight years and will continue to do so in the future. Through water conservation programs, the Hospital has stabilized its total water consumption since 1982, a period where the Hospital added almost 200,000 square feet of new space.

Specific water conservation methods, which result in a reduction in sewage, include the following:

- o Transfer of the cooling water discharge from vacuum pumps and water coolant air compressors from the sanitary sewer system to the storm drainage system.
- o Flow control devices on showers and lavatories
- o Flushometer retrofit kits at water closets
- o Partial recirculation systems at mechanical systems such as medical and laboratory air compressors
- o A change in the process of producing lab grade water for laboratory use
- o Excellent maintenance and promotion of an in-house awareness of staff to conserve

Beth Israel is committed to the reduction of water consumption and a consequent reduction in sewage generation, and will continue with its efforts to reduce excess water use and sewage generation in the buildings proposed in this plan.



Proposed developments will be required under the new plumbing code, effective March 1991, to install reduced flow, 1.6 gallons-per-flush toilets. These toilets will reduce the anticipated sewage generation from the new addition by approximately 30 percent, since sewage estimates are based on the older model toilets.

#### Heating and Cooling

Space heating and cooling is expected to be provided by the Medical Area Total Energy Plant (MATEP) Steam System, utilizing largely waste heat from electrical generation. Capacity for future projects will be analyzed in project studies. Cooling will be provided from chilled water from MATEP.

#### Utilities

Electrical demand and consumption will increase only proportionately to square footage. All facilities will be designed to comply with or exceed the standard allowed by the State Building Code. Electricity will be provided by MATEP and/or Boston Edison.

#### Hazardous Waste

Hazardous waste will increase proportionately to the Hospital services provided and will be handled by existing disposal systems expanded as necessary, in accordance with state and federal regulations. A full treatment of this issue is included in the above-referenced DPIR (3/92).

#### Air Quality

No industrial air contaminants will be generated. Chemical and biological fume hood exhausts will be properly controlled following NIH, NRC, NIOSH and EPA guidelines and regulations.

A microscale carbon monoxide (CO) air quality analysis has been carried out for the proposed Clinical Center at Beth Israel Hospital. Ambient air quality was measured and modeled at two intersections bordering the proposed project site (Brookline Avenue/Longwood Avenue and Binney Street/Longwood Avenue) under three scenarios: 1992 Existing, 1995 No-Build, and 1995 Build conditions. Traffic volumes and vehicle speeds for peak conditions, combined with worst case meteorological conditions, were used to predict maximum one-hour and eight-hour CO concentrations. No project-specific roadway or traffic control improvements were assumed for worst case 1995 air quality modeling, a very conservative set of assumptions.



A short-term CO monitoring program performed in January 1992 indicates that existing CO levels at the two intersections are well below the Massachusetts and National Ambient Air Quality Standards (NAAQS) for CO. A comparison of the monitored CO levels with the levels predicted with CAL3QHC Intersection Model shows that the model was fairly accurate in simulating the air quality conditions associated with the traffic at each intersection. A statistical comparison of the modeled and measured CO concentrations was used to estimate a one-hour CO background of 2.3 ppm and an eight-hour CO background of 1.7 ppm. These values, almost identical to background levels, were added to worst case modeling impacts for each scenario to determine the worst possible existing air quality and the maximum future air quality impacts from the proposed project.

Under these worst case conditions, no violations of the one-hour (35 ppm) or eight-hour (9 ppm) NAAQS for CO are predicted at either of the intersections in 1992 or 1995. Under the 1995 Build scenario, maximum one-hour and eight-hour CO concentrations are predicted to be 8.5 ppm and 7.1 ppm, respectively. This analysis also includes the worst case predicted impacts from the underground parking garage ventilation exhaust and background CO. Even without any roadway improvements for the 1995 Build case, The Clinical Center at Beth Israel Hospital will not interfere with the attainment and maintenance of the NAAQS for CO in the project area. Even if the higher DEP default values for CO background are used, full compliance with the NAAQS is demonstrated. The maximum predicted CO concentrations were predicted to occur at the intersection of Brookline and Longwood Avenues.

A comparison of the 1995 Build and No-Build modeling results shows that the proposed project will have a small effect on air quality. An analysis of the proposed underground parking garage indicates that maximum ambient CO levels will be in compliance with published EPA criteria for tunnels and parking garages. Therefore, The Clinical Center is consistent with the Massachusetts State Implementation Plan (SIP) for CO.

### **Construction Impacts and Mitigation**

It is anticipated that the principal issues pertaining to the construction of Master Plan projects will involve coordination with other area institutions and with utility providers; minimization of air and noise effects; and maintenance of vehicular circulation and pedestrian access and safety.

The Beth Israel Hospital will comply with all state and local regulations concerning construction activities. The project will be subject to a Construction Management Agreement with the Boston Transportation Department. Additionally, the Hospital will continue to participate in the Medical Area Services Corporation's (MASCO) Subcommittee on Construction Coordination to ensure that area disruption is minimized.



## **Housing Analysis**

As has been noted elsewhere in this document, Beth Israel draws heavily on existing residents from nearby neighborhoods for its employees. For this reason, it is likely that the proposed projects will not generate significant housing demand. However, it has also been noted elsewhere that the Special Trust and Linkage payments associated with The Clinical Center project will be used to increase the availability of affordable housing in Boston, or to serve other housing needs.

## **Urban Design**

The urban design character of the Beth Israel Hospital campus can be described as an integrated collection of buildings, built over time, merging visually and functionally into a total ensemble. Enhanced by the continuity of facade materials -- beige brick, limestone trim, punched window openings -- the impression is that of a large closely-knit collection of buildings.

Two grids interconnect the buildings, each originating from the earliest buildings built on the campus. One is the grid parallel to Brookline Avenue, with a consistent 70 foot set-back of buildings from the street. The other intersecting grid parallels the north-south axis of the site. Its orientation derived from the intent to provide north light into the original operating rooms; despite the subsequent demolition of the original "operating theatre" building, the strong diagonal north-south grid dominates the campus. Behind the low-rise wall of buildings fronting on Brookline Avenue, the buildings at the center and rear of the campus are based on the north-south diagonal grid. The eight story wall of the Gryzmish (1928)/ Stoneman (1950) building axis is continued with the twelve story Feldberg/Reisman tower; perpendicular to the Gryzmish/Stoneman axis, its front (west) face is angled parallel to Brookline Avenue. The proposed new construction will take its urban design themes from the existing campus.

The Southeast Building will rise at the rear of the site, continuing the diagonal north-south grid of the central and rear buildings. It will complete the fourth quadrant of inpatient wings; stretching eastward from the central elevator core serving the Feldberg/Reisman tower to the west, Stoneman to the south and Gryzmish to the north.

The proposed development at the Massachusetts College of Art (MCA) site maintains the Brookline Avenue setback with the preservation of the existing building, parallel to Brookline Avenue. Both the existing building and the new tower behind it maintain the axis parallel to Brookline Avenue. The tower at The Clinical Center continues the front facade of the Feldberg/Reisman tower, parallel to Brookline Avenue. The new tower is set back from the lower scale streetwall buildings. The height of the existing MCA building is maintained as the proposed building turns the corner to Longwood Avenue.



The addition of The Clinical Center to the Beth Israel campus provides the opportunity to continue the open-space, tree-lined street frontage and pedestrian seating established on the Beth Israel campus to the major intersection in the Longwood Medical Area. The open lawn will be retained and improved with landscaping, paving, seating, lighting and signage.

### Campus Character

The architectural development of the proposed buildings will preserve the unified character of the total campus. The Beth Israel development at the MCA site will relate to the existing Beth Israel campus and complement the existing MCA building facade in its use of masonry and limestone. Detailing and decorative features will respond to the elements of the existing MCA building.

A pedestrian connector will link Beth Israel Hospital main entrance and public levels with the central atrium space at The Clinical Center; public spaces within the building will be designed to encourage pedestrian movement.





Figure 14. View of Beth Israel Campus from Brookline Avenue





### Casey LMA Program

Beth Israel, as a member of the Medical Area Services Corporation (MASCO), participates in the development of the Longwood Medical Area in Boston. The program of development and the program of development in the LMA. The program is listed in Table 8 and is a part of the overall development in the LMA. The program is a part of the overall development in the LMA. The program is a part of the overall development in the LMA.

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**Figure 15. View of Beth Israel Campus from South**



### Other LMA Projects

Beth Israel, as a member of the Medical Area Services Corporation (MASCO), seeks to coordinate its development efforts within the Longwood Medical Area in order to minimize the impacts of construction and the necessary growth of institutions in the LMA. The projects listed in Table 8 have been identified as potential developments in the LMA over the next 10 years. Master Plans have been filed for some, others will be included in Master Plans in preparation.

Beth Israel will continue to coordinate its construction efforts with other area institutions. The current schedule and location of projects in the area suggests that they can be carried out without disruption and interference.

In any case, Beth Israel will develop detailed construction and traffic plans in cooperation with other institutions on all the projects in this Master Plan.

|                                                                               |            |            |             |
|-------------------------------------------------------------------------------|------------|------------|-------------|
| 1. Expansion of Research Facility<br>(1992-1994)                              | 17,500     | 91,200     | 87,100      |
| 2. Construction of Medical<br>Research Building<br>(1994-1996, 2,200 sq. ft.) |            |            |             |
| TOTAL                                                                         | 17,500 GSF | 91,200 GSF | 87,100 GSF  |
| Other LMA Construction Potential                                              |            |            |             |
| 1. Ambulatory Care Facility<br>(1992-1994, 100,000 sq. ft.)                   |            |            |             |
| 2. Clinical Facility<br>(1992-1994)                                           | 20,000     | 91,237     | 100,700     |
| 3. Outpatient Surgery Building<br>(1994-1996, 20,000 sq. ft.)                 | 20,000     |            | 20,000      |
| 4. Outpatient Clinic (1996-1998)<br>Renovation                                |            |            |             |
| 5. Research Laboratory<br>(1994-1996)                                         | 2,000      |            | 2,000       |
| TOTAL                                                                         | 42,000 GSF | 91,237 GSF | 122,700 GSF |



**Table 10**  
**Projects Proposed by Other LMA Institutions**

| <u>Institution</u>                                                             | <u>New Construction</u> | <u>Demolition</u>  | <u>Net Add</u>     |
|--------------------------------------------------------------------------------|-------------------------|--------------------|--------------------|
| <u>Brigham &amp; Women's</u>                                                   |                         |                    |                    |
| 1. Longwood Medical Research Center (1988-1990)                                | 98,200                  | 58,400             | 39,800             |
| 2. Clinical Support Facility (1990-1996)                                       | 148,400                 | 60,200             | 88,200             |
| 3. Tower Lobby, Phase II (1995-2000)                                           | 3,700                   | -                  | 3,700              |
| 4. Academic Research Facility (1995-2000)                                      | 178,500                 | 91,200             | 87,300             |
| 5. Renovation of Medical Research Building (1991-1993) (28,280 sf.)            | -                       | -                  | -                  |
| <b>TOTAL</b>                                                                   | <b>428,800 GSF</b>      | <b>209,800 GSF</b> | <b>219,00 GSF</b>  |
| <u>New England Deaconess Hospital</u>                                          |                         |                    |                    |
| 1. Ambulatory Care Facility (1989-1990): Renovation (85,000 GSF of renovation) | -                       | -                  | -                  |
| 2. Clinical Facility (1991-1995)                                               | 250,000                 | 51,227             | 198,733            |
| 3. Office Support Building (Note: Demolishing a parking lot)                   | 52,500                  | -                  | 52,500             |
| 4. Child Care Center (1990): Renovation                                        |                         |                    |                    |
| 5. Radiation Laboratory (1989-1990)                                            | 2,500                   | -                  | 2,500              |
| <b>TOTAL</b>                                                                   | <b>305,000 GSF</b>      | <b>51,227 GSF</b>  | <b>253,773 GSF</b> |



**Table 10 (continued)**  
**Projects Proposed by Other LMA Institutions**

| <u>Institution</u>                                                        | <u>New Construction</u> | <u>Demolition</u>  | <u>Net Add</u>     |
|---------------------------------------------------------------------------|-------------------------|--------------------|--------------------|
| <u>Harvard Medical School</u>                                             |                         |                    |                    |
| 1. D-2 Wing (1990-1991)<br>Renovation & expansion                         | 8,000                   | -                  | 8,000              |
| 2. East Quadrangle<br>Research Facility                                   | 170,000                 | 30,430             | 139,570            |
| 3. Parking Underground<br>(1990-1991)                                     | -                       | -                  | -                  |
| 4. School of Public Health<br>(1990-1992) Building II                     | 48,000                  | -                  | 48,000             |
| 5. School of Public Health<br>Building I Wrap Around<br>(1995-2000)       | 112,000                 | -                  | 112,000            |
| 6. Phase II Parking (1995-2000)                                           | -                       | -                  | -                  |
| 7. SPH Quadrangle (1995-2000)<br>Demolition of Dental School<br>Buildings | -                       | 46,400             | 46,400             |
| <b>TOTAL</b>                                                              | <b>338,000 GSF</b>      | <b>76,830 GSF</b>  | <b>261,170 GSF</b> |
| Subtotal of Institutions<br>that have submitted<br>Master Plans:          | 1,071,800 GSF           | 1,337,857 GSF      | 733,943 GSF        |
| <u>Others</u>                                                             |                         |                    |                    |
| 1. Joslin (Research Expansion)                                            | 85,000                  | -                  | 85,000             |
| 2. Mass. College<br>of Pharmacy                                           |                         |                    |                    |
| Dormitory                                                                 | 65,000                  | -                  | 65,000             |
| Science Building                                                          | 60,000                  | -                  | 60,000             |
| <b>TOTAL</b>                                                              | <b>210,000 GSF</b>      | <b>-</b>           | <b>210,000 GSF</b> |
| <b>GRAND TOTAL</b>                                                        | <b>1,281,800 GSF</b>    | <b>337,857 GSF</b> | <b>943,943 GSF</b> |



## **CHAPTER V. COMMUNITY BENEFITS AND SERVICES**

Beth Israel delivers health care to its entire community regardless of race, creed, sex, national origin, handicap, age, or ability to pay. In 1991, the Hospital provided health care to 28,786 inpatients, 160,232 ambulatory visits and 53,966 in the Emergency Unit. Of these visits 49 percent were Medicare and Medicaid patients. The Hospital provided \$9.4 million in charity care and assumed \$8.4 million of bad debt.

The Hospital is fully committed to its community initiatives, sensitive to present and future patient needs, and concerned with serving those in greatest medical need. Ten years ago Beth Israel established one of the first hospital-based Offices of Community Relations to provide easy public access and information on health matters. Beth Israel's Office of Community Relations remains a central conduit, responding to community requests for health information, organizing prevention and health promotion outreach to the general public. Below are some of the ways in which Beth Israel fulfills its ongoing mission to care for today's illness and tomorrow's health:

The benefits to the City of Boston and to the nearby neighbors from the proposed projects in this plan accrue in the form of major new employment and economic opportunities, better health care facilities, additional free health care, improved health related education, and resources for new housing, among other important contributions.

### **Employment**

Economic projections estimate the creation of up to 900 permanent jobs at Beth Israel Hospital resulting from the Master Plan projects. Since at the present time, about 41% of Beth Israel employees are residents of the City of Boston, a significant proportion of these jobs are expected to be filled by Boston residents.

As the research efforts of the Hospital also grow during this period, even greater employment increases will be associated with the space leased by the Hospital at 99 Brookline Avenue and at Olmsted Plaza to serve that growth.

Substantial numbers of construction jobs will also be generated by these projects. Many of these jobs will be available to Boston residents under the City of Boston's targeted employment initiatives.

### **Job Training**

Job training is an on-going activity at Beth Israel Hospital. Recruiting new applicants for the positions created by the proposed projects will be done by using all the outreach approaches described below. It is likely that many Boston residents will be selected for employment and training, because it is the policy of Beth Israel to extend employment opportunities and career advancement to Boston residents through its recruitment, hiring and training activities. The activities described below will be applied to recruitment, employment and job training for all new employment opportunities created by the projects proposed in this Master Plan.



### Training Activities

Beth Israel Hospital is committed to providing its employees with the opportunity to further their personal and professional growth through work related internal and external educational programs. The Hospital's catalogue of internal training and development programs is updated bi-annually with entire new programs and repeat offerings of some of the most successful courses.

In the more than 66 training programs offered by the Training Unit, nearly 950 employees participated with representative minority participation in most courses. In addition, numerous employees, including females and minorities, participated in the Beth Israel's tuition reimbursement program. The Hospital has established a tuition reimbursement program which allows up to \$1,500 a year to reimburse eligible employees for courses directly related to the employee's current job responsibilities or promotional opportunities.

#### Adult Diploma Program

In June 1989, six Beth Israel employees received their High School diploma through a program sponsored by the Hospital and funded under a grant from Boston Works. Many employees receiving their diploma were minorities.

#### Health Corps Volunteers

For several years the Hospital has conducted a six week summer program for high school students with the purpose of introducing high school students to job opportunities available in health care. The hospital publicizes this program and actively recruits high school students from the City of Boston.

#### Research Apprenticeship Program

For 12 years, the Beth Israel Department of Research Administration has participated in a National Institute of Health sponsored program to provide 8 weeks of full-time summer employment to local minority high school students. The program is designed to encourage minority students and teachers from Boston area schools to pursue science by working with Beth Israel medical researchers in their labs. Dr. Roberto Feliz, a second year anesthesiology resident at Beth Israel, was one of the first students in this program. In 1989 NIH eliminated funding for such programs in other institutions; however, NIH continued its support at Beth Israel due to the excellence of its program.



### Health Careers Committees

In 1988/89 two efforts were developed to help attract Boston high school students to careers in health care. The Beth Israel Committee called "Exploring Health Career Committee" brings in students monthly from Boston high schools to explore careers in the laboratories, Radiology and Nursing. The vast majority of the 25 students who participate each month are females and minorities. The "Boston Teaching Hospital Collaborative Health Care Committee", of which Beth Israel serves on the Board, is a program designed to promote health care careers to Boston high school students through outreach to the schools.

### Other Work Arrangements

In 1989 the Hospital began a pilot work-at-home program for clerical and typing staff and is currently assessing how viable this will be. The Hospital also has an in-house secretarial and clerical temporary pool that was developed in 1988 which allows employees to have some flexibility in the number of hours they work or how often they work. This is attractive to working mothers re-entering the work force, or working mothers who may wish or be able to work only part-time.

### Flexible Scheduling and Job Sharing

Beth Israel is committed to encouraging flexibility for employees within the context of delivering excellent patient care. A number of departments had adopted flextime, when feasible, balancing departmental needs and employee needs. Some of these departments include Data Processing, Respiratory Therapy, Social Services, Human Resources and Nursing.

Since 1981 the Hospital has continued to expand job sharing whenever there is both the interest and the ability to accommodate the arrangement. Examples of successful job sharing teams are: administrative secretaries, medical library manager, pharmacist, nurse, and development officer. A job sharing position has also been developed for two compensation analysts in Human Resources. They each work part of their time on-site and a portion of their time at home, via a personal computer linked to the Hospital. This has provided an opportunity for two employees who had both recently become mothers to continue working.

For five years running Beth Israel has been hailed as a top employer in the nation by Working Mother magazine for its very effective efforts to make the Hospital a desirable place of employment for working mothers.



### Multicultural Enhancement/Workforce 2000

The Human Resources staff have begun planning a training and awareness program designed to educate and sensitize supervisors and managers to the challenges and opportunities that a changing and diverse workforce will bring to the workplace. Programs will include Workforce 2000 information from the Department of Labor's Hudson Report, Cross-cultural Training and Managing Diversity Training for managers and supervisors.

### Health Careers Training and Development

At the present time the Human Resources Division is exploring a potential funding source which would enable the Hospital to develop a career training program for lesser-skilled employees who wish to become Radiographers. A task force has convened to develop a proposal for this effort which is primarily aimed at increasing health career opportunities for minority employees.

### "Choose Nursing in the Nineties"

This three year old program is a response to the nationwide shortage of nurses and particularly, the lack of minorities in the profession. Under this program, the Hospital recruits high school minority and low-income youth in the Boston area to encourage them to enter the nursing field. Twelve to fifteen teenagers are provided with 372 hours per year of hands-on nursing during their Junior and Senior years of high school. The Program includes a special outreach to students from racial/ethnic minority backgrounds and provides community resources if they need additional support to enter college based nursing education programs. This program is in addition to several already offered at Beth Israel.

### Scanlon Plan

PREPARE/21 (Preparing for the 21st Century) is a hospital-wide program in participative management modeled after the Scanlon Plan utilized in some manufacturing firms throughout the country. Never previously instituted by a hospital, Beth Israel's PREPARE/21 is receiving national recognition as an imaginative, effective and innovative methodology for contending with many of the pressures facing today's hospitals.



### Recruitment Activities

The Hospital uses many techniques to improve recruitment and increase the flow of applicants, including maintaining contacts and attending job fairs with organizations such as the Massachusetts Division of Employment and Training, the Massachusetts Rehabilitation Commission, Women's Educational and Industrial Union, Goodwill Industries, ABCD, Inc., Occupational Rehabilitation Group, Urban League, Dimock Community Health Center, many specialized employment and training agencies, Roxbury Community College Jobs Clearinghouse, many women's colleges and numerous other public agencies and organizations. On a monthly basis, a listing of available positions is mailed to over sixty organizations many specializing in the training and/or placement of minorities and females and residents of Boston.

#### Communications with Recruiting Sources

Members of the Human Resources staff communicate with representatives from many recruiting sources. The Hospital updates these recruitment sources on its employment process, with explanations of current and future job openings; sources are requested to refer qualified candidates to the Hospital for consideration.

#### Employee Referrals

All employees, including minority and female employees, are encouraged to refer qualified applicants for all positions in the Hospital to the Human Resources Division. 35% of Beth Israel external hires are the result of employee referrals.

#### Job Posting

All open Hospital positions are posted for wide exposure to all employees. More general communication with employees is assisted through weekly newsletters to all employees, with translations into Spanish and French.

#### Job Fairs

The Hospital also actively participates in job fairs. These include the Career Expo for Minority Students held in Boston every year, the Black Nursing Convention both regional and national conferences and the Grow with Massachusetts job fair.



### School Recruitment/Special Programs

Active recruiting programs are carried out at secondary schools, junior colleges and colleges in the Boston area. The Human Resources Department also coordinates special programs such as the sponsoring of technical and nontechnical cooperative programs at Northeastern University, Burdett School, Roxbury Community College, Bunker Hill Community College and many employment and training programs. Special efforts to reach minorities, women, and Boston residents are made through the summer Volunteer Health Corp, the Boston Summer Youth Program, through Private Industry Counsel and Research Apprenticeship programs for high school students, Training, Inc., the Boston Compact and the Humphrey Center Health Career Committee. In 1988/1989, the Hospital participated through advertisement in the Cambridge College Multi-Cultural Festival.

### Affirmative Action

Beth Israel Hospital has a very high representation of women and minorities in its work force. For the last three years the Hospital has maintained a workforce comprised of about 30% minorities and 77% women.

In all but three job groups both minorities and women are either appropriately represented or representation significantly exceeds availability in the labor force. There are a few areas where the Hospital continues to strive to increase utilization of either women or minorities. Toward this end the Hospital establishes goals for hiring and promotion and identifies recruitment sources to meet these needs. Beth Israel continuously reviews its hiring/promotion practices to ensure that affirmative action efforts are underway and that selection criteria are appropriate.

### Affirmative Action/Equal Opportunity Training

The Hospital conducts supervisory training on affirmative action/equal employment opportunity laws, principles and practices. This type of training has been offered since 1984 and was last updated in 1987. The program entitled "Preventative Employment Medicine" is designed not only to instruct supervisors in their legal responsibilities but to sensitize them to the subtleties of discrimination and harassment in the workplace.

### Interpreter/Translator Services

Reporting to the Human Resources Division since 1981, the Interpreter Services Department provides employees and patients with interpreter services in a wide variety of languages. The predominate languages spoken by BI employees are Spanish and French. Interpreters assist employees during the employment process, supervisors utilize the service to ensure that job expectations are clear and questions are answered. The service provides over 14,000 hours of skilled interpretation per year.



### English as a Second Language

Beth Israel Hospital has long recognized that the inability to communicate in English may hamper an employee's job performance or be a barrier to an employee's advancement. Hence, in 1981 the Hospital first developed English as a Second Language (ESL) classes, as well as numerous other classes on various aspects of communication and language skill development, which have been offered on an ongoing basis ever since. In the 1988-1989 fiscal year, 45 employees participated and graduated from the ESL series. The Human Resources Department is currently reviewing the ESL program with plans to augment this teaching with work habits training and a cultural awareness component.

### Health Care

The new buildings proposed in this plan will provide expanded and upgraded inpatient care facilities. Since Boston residents comprise about 33% of Beth Israel's inpatient admissions, many community residents will benefit directly from the improvements at the Southeast Building.

Beth Israel now provides about \$2.5 million in free care and bad debt through its outpatient activities. With the new clinical facilities at The Clinical Center, this care benefit is expected to increase by \$500,000 to 750,000/year.

In less direct but very important ways, a new Center for Medical Technology will provide improved diagnostic and treatment facilities of benefit to all users -- ambulatory and inpatient -- of Beth Israel Hospital and other Longwood Area hospitals that participate.

### Child Care

Beth Israel is meeting child care needs with the 1991 opening of a new Center on site for employees. All employees, 41% of whom come from the City of Boston, are served by this Center. Five places in the Child Care Center have been reserved for employees from the Mission Hill and Fenway neighborhoods.

### Education

Beth Israel has proposed the introduction of a Medical Learning Center within The Clinical Center project. The Learning Center will be a community education facility providing exhibits, and other resources pertaining to health and health care. To reinforce the health related use of this prominent LMA location, the Learning Center will provide readily available information about health and illness to visitors and neighbors.



### **Housing Linkage**

Millions of dollars will be paid in linkage funds to the City of Boston for the development of affordable housing from the Master Plan projects to which linkage is applicable. These revenues are substantial and are scheduled to begin in the near future, a period when the decline in building starts in the City has reduced the flow of linkage funds. The specific amounts of linkage will be deferred in Development Impact Plan Agreement with the City for each Master Plan Project to which they apply.

While the Hospital is not directly responsible for the linkage payments from the Olmsted Plaza development, as a major tenant in that project, Beth Israel will be contributing indirectly to the linkage contributions from that project as well, through its lease payments to the owner.

### **Community Trust Fund**

The Clinical Center development will contribute to a Trust Fund which benefits the Mission Hill and Fenway neighborhoods. Specifically enacted by the Massachusetts legislature, this Trust Fund contribution is unique to this project in the City. The funds are to be used by community organizations in those neighborhoods.

### **Traffic/Transit Improvements**

The projects proposed in this Master Plan afford opportunities to improve circulation significantly within the LMA. Because of the adjacency between the MCA site and the Beth Israel main campus, opportunities exist to use the Hospital Service Road for some of the vehicles associated with The Clinical Center development, and thus reduce the demand on Longwood and Binney Streets. As a result of The Clinical Center project, Beth Israel will widen Longwood Avenue between Binney Street and Brookline Avenue, an improvement which has been assigned high priority by the City of Boston, LMA hospitals, MASCO and LMA neighbors.

As shown on Figure 12, the reconfiguration of existing parking facilities, and location of parking entrances and exits at new garages may allow for additional circulation options into and out of Beth Israel garages. The Hospital will work closely with the City and with LMA institutions to determine the feasibility of these options.

Beth Israel will continue to work with the MBTA and its consultants as plans for the "Bio-Tech Line" progress. Beth Israel wants to enhance transit access to its campus and will seek to facilitate its construction.

Other ongoing community services at Beth Israel include:



### **Neighborhood Health Center Affiliations:**

Beth Israel provides services to Dimock Community Health Center, Roxbury Comprehensive Community Health Center, South Cove Community Health Center and Fenway Community Health Center. Services cover a wide range including HIV testing and AIDS care, OB/GYN, medical, surgical, nursing, social work, nurse midwifery, interpreter services, financial support, renovation funding, and technical assistance. Commitments to most of these centers have been made for five years. The FY 1992 Beth Israel commitment is \$567,000.

### **Hospital-Based Programs:**

The Family Van, headed by a Beth Israel physician and funded, in part, by Beth Israel, is a vehicle-based community health program for inner-city persons of childbearing ages who are missed by current programs. Travelling between Dorchester, Roxbury, and Mattapan, the van provides education and counseling services about reproduction issues, serves as an advocate for those who have had difficulty gaining access to the health care system, make referrals to community agencies, and offers screening services to improve maternal and birth outcomes. The program is a collaboration between Beth Israel and city, state, and federal agencies. The FY 1992 Beth Israel commitment for this project is \$85,000.

Healthy Moms is a program developed by the Hospital to improve access for women who need prenatal care. The program offers free taxi rides to and from or reduced-rate parking at Beth Israel for appointments; scholarships to childbirth education classes; on-site assistance with Medicaid applications; WIC information and applications; and interpreter services. The budget for FY 1992 is \$64,300.

### **Inner City Prenatal Care:**

Beth Israel's High Risk Prenatal Collaboration Program is designed to improve access to health care services by fostering partnerships between registered nurses and outreach workers. Both groups have skills that would make each more effective in the communities they serve. A collaborative effort between Beth Israel, Dimock Community Health Center, the Boston Visiting Nurses Association, Children's Hospital, and the Educational Development Center, the program will train 30 registered nurses to identify and care for high-risk perinatal clients through a 30-hour training program at Beth Israel supplemented by clinical rotations at health centers, hospitals, visiting nurses associations, and the schools. The program will also provide training for 18 perinatal outreach workers/family support assistants through a 22-week session that includes 200 hours of clinical training. Participants for this program are recruited through targeted communities.

For Project Life, a community based program to reduce high incidence of infant mortality in Mission Hill, BI provides technical services such as health care expertise, and administrative assistance, as well as access to free infant formula.



### **Hospital In-Kind Community Services and Charitable Contributions:**

Beth Israel has made a conscious effort to supply furnishings and medical equipment to local and international community agencies, such as the Fenway Community Health Center, Dimock Community Health Center, Roxbury Comprehensive Health Center, Museum of Afro-American History and public health projects in Africa, El Salvador and Armenia. The approximate value of these donations is estimated to be \$39,000. In-kind community services, including charitable contributions are estimated at about \$65,000. (see attached for detail)

### **Food Assistance:**

Beth Israel is a founding member of The Longwood Medical Area/Mission Hill/Fenway Food Project, helping to provide food assistance to about 6,000 individuals last year. Beth Israel offers its truck and driver biweekly to stock the Parker Hill/Fenway Food Pantry with goods from the Boston Food Bank. The project collected 9,000 pounds of food from area institutions last year.

### **Programs for the Elderly:**

Beth Israel provides ongoing community education programs for the elderly in Brookline, Brighton, Jamaica Plain, Chinatown, Newton, and other communities, as requested. The BI Office of Community Relations regularly arranges speakers for senior centers on a comprehensive range of health and mental health issues of concern to the elderly.

### **Ongoing Community Activities:**

Beth Israel's Sexually Transmitted Disease Clinic, in cooperation with the Massachusetts Department of Public Health and the AIDS Action Committee, has been an AIDS test site since 1987. The clinic last year gave 1,031 AIDS tests.

Beth Israel provides free health screenings for cancer (colorectal, oral, and prostate), depression, and other diseases during designated awareness weeks.

Albert Schweitzer Urban Fellows Program works to match community agencies with medical, nursing, and social work students to carry out health and social services needed in the community. The Beth Israel Office of Community Relations helps make these connections.

### **Community Health Education Programs for High Schools:**

BI nursing, medical and social staffs conduct talks at High Schools on adolescent sexuality, sexually transmitted diseases, prenatal and parenting education.

Beth Israel is a collaborator with Brookline High School's Reproductive Biology Class providing clinical staff and the site to enhance classroom learning.



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